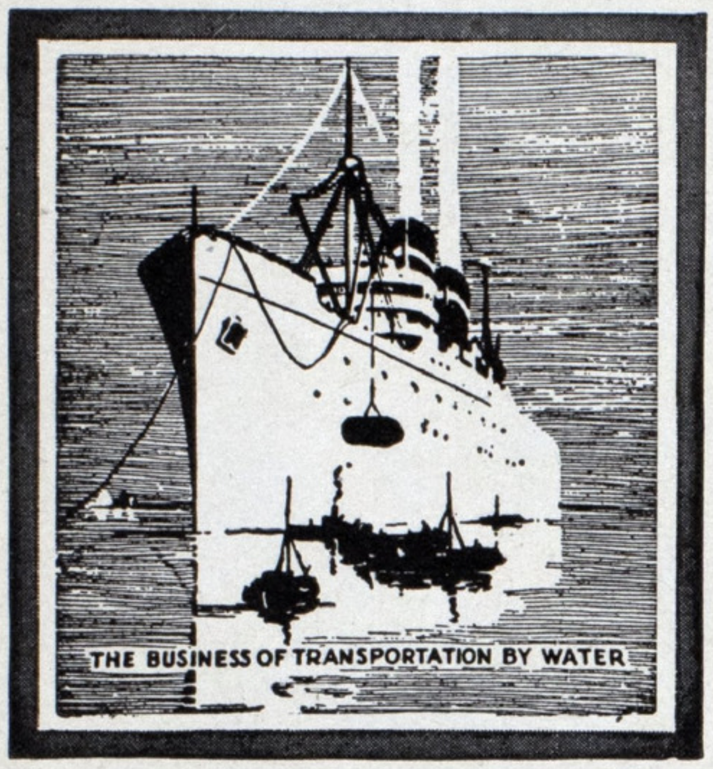
# Marine Review

*The National Publication Covering the Business of Transportation by Water*

CLEVELAND FOUNDED 1878 NEW YORK



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# « EDITORIAL »

## New Shipbuilding Program Should be Undertaken

CHOICE of either of two courses, one dictated by a policy of timidity and the other by a policy of boldness, leaves but one way open to the courageous nation or individual. About a year ago the late Captain McAllister startled timid people by the bold suggestion that the government authorize the construction of 100 modern cargo ships at a cost of $125,000,000. His proposal was based on the urgent need for modern cargo vessels and the equally urgent need to relieve unemployment, while at the same time helping to save the essential industry of shipbuildining.

In a later reference to this bold scheme he said . . . . "There will be a pressing demand in the near future for a large number of up to date speedy and efficient cargo vessels, both for commercial and naval purposes. It was proposed . . . . several months ago to offset the unemployment in the shipbuilding and allied industries, that 100 modern cargo vessels be constructed by the government. Whether or not this is the best way to solve this problem is immaterial. If any better means can be devised whereby they can be constructed under private auspices, the results so far as alleviating unemployment would be the same. Shipbuilding it must be understood with all its ramifications reaches into more lines of industry than any other structures made by man. The beneficial results would therefore reach into nearly all the states of the Union . . . . . The shipbuilding industry, if it is not to disappear almost entirely, must have more help within a very short time or else the gravest consequences may arise."

That was written at the end of 1931 and applies with even greater force today. Here is an essential industry facing imminent exhaustion of work to do, which is the only means of continuing its existence, while on the other hand properly planned merchant ships could now be laid down providing employment in building necessary, useful, self-liquidating units.

We are confident that a plan can be worked out with little or no ultimate expense to the government. Obsolete tools are tolerated in any industry, not by choice, but by what is considered necessity because of the inability to procure capital.

A study of the age of American merchant vessels, published in MARINE REVIEW for October, 1931, graphically shows that there are many units in use in the American merchant marine which are today obsolete and should be replaced. This research covered 1600 vessels of 1000 gross tons and over, ordinarily usefully employed at sea, on the Great Lakes and inland waterways as of June 30, 1930. Of this number 134 vessels of 499,087 gross tons are between 30 and 40 years of age; 323 vessels of 1,691,310 gross tons are between 20 and 29 years in age; 150 vessels of 819,736 gross tons are between 15 and 19 years of age; and 716 vessels of 4,090,430 gross tons are between 10 and 14 years of age. Of the 1600 vessels considered, only 277 are less than 10 years old.

Our proposal is that a cooperative study of the age and employment of vessels now owned and operated by American steamship lines be made by representatives of the government and of the companies owning these vessels, without distinction as to foreign and domestic service, with the view of establishing definitely and accurately on a program of replacements justified on a business basis for present and clearly defined future needs. The results of such a study would immediately bring out the need of replacing a large number of vessels.

Allow that the most urgent need will be covered by something like 200 vessels calling for a total expenditure of about $250,000,000. Under proper safeguards this capital could be advanced, as needed by the proper government agency and could be considered a part of the unemployment relief program. In this case the advance of funds would be in the form of loans at low rates of interest and these loans would be secured by the ships themselves.

If a program something along this line were put into effect, the American merchant marine would within a period of three years be on the road to thorough modernization and would be in a far better position to meet current and future competition.

# Treaty is Signed for Deep Waterway

## from Ocean to Great Lakes Ports

A TREATY between the United States and Canada, covering the many international questions involved in making possible the navigation of ocean ships from the sea to the Great Lakes, was signed in Washington on July 18 by Secretary of State Henry L. Simpson and the Canadian minister to the United States, William D. Herridge. The treaty provides for the construction of a 27-foot waterway from the sea to the Great Lakes. Certain portions, along international waters, will be done jointly by the two countries, while that part of the waterway lying wholly within Canadian territory will be done solely by Canada and no control or supervision will be exercised by the United States over this national portion of the undertaking.

To become operative leading to the actual building of the waterway this treaty must be ratified by the governments of the United States and Canada. Pending the next session of congress to meet Dec. 1, the senate committee on foreign relations will make an investigation and hold hearings on matters touching the St. Lawrence waterways treaty, though Senator Borah has said that this investigation does not imply a suspicion of or disagreement with its terms. It is expected that hearings before a subcommittee of the foreign relations of the senate will begin its investigation sometime in August.

### The President's Comment

President Hoover's own comments on this project on the occasion of signing the treaty, follows:

"The signing of the Great Lakes-St. Lawrence waterway treaty marks another step forward in this the greatest internal improvement yet undertaken on the North American continent. The treaty must yet be ratified by the legislative bodies of the two governments and is not effective unless this is done.

"The treaty represents, to me the redemption of a promise which I made to the people of the Midwest. It provides for the construction of a 27-foot waterway from the sea to all Canadian and American ports on the Great Lakes. Such a depth will admit practically 90 per cent of ocean shipping of the world to our lake cities in the states of New York, Ohio, Michigan, Indiana, Illinois, Wisconsin and Minnesota. Its influence in cheapening transportation of overseas goods will stretch widely into the interior areas from these points.

"Its completion will have a profoundly favorable effect upon the development of agriculture and industry throughout the Midwest. A large by-product of power will benefit the Northeast. These benefits are mutual with the great Dominion to the north.

"The waterway will probably require ten years for completion, during which time normal growth of traffic in the nation will far more than compensate for any diversion from American railways and other American port facilities. The economic gains from improved transportation have always benefited the whole people.

### Total Cost Is Half-Billion

"Under the engineers' estimates, the total cost will be approximately $543,000,000 of which approximately $272,000,000 will need to be expended by the United States. Some portion of these expenditures has already been made by both countries and the actual total amount of new funds to be called on from the United States is estimated at about $258,000,000 and from this sum must be deducted the realization which may be made from about 1,100,000 horsepower on the American side of the international section. The disposal of this power is reserved as a purely domestic question in the United States.

"The question of the effect of the treaty provision covering the diversion of water from Lake Michigan upon the 9-foot waterway from Chicago to the Mississippi has been raised.

"I may quote the statement I received from General MacArthur, acting secretary of war, which clarified this question:

"Dear Mr. President: I am in receipt of your request for a statement from this department in confirmation of the verbal assurances given to you and to the secretary of state by the corps of engineers, that the provisions in respect to the diversion of water from Lake Michigan in the proposed Great Lakes-St. Lawrence to provide for the maintenance of deep waterway treaty are sufficient for 9-foot waterways from Chicago to the Mississippi.

"I am glad to confirm that the provision in the treaty does provide the necessary diversion for this purpose.

" 'Douglas MacArthur,
Acting Secretary of War"

"The Canadian project of the two-stage development in the international section has been adopted instead of the original American projest of a single stage development. The cost is slightly more but the Canadian officials have felt that the two stage development is desirable for many reasons, among others, for the complete assurance of the safety of the city of Montreal.

"The project is of the first importance to the whole continent. The many and extremely complex engineering, legal, commercial and international problems have been worked out by the representatives of both countries in a spirit of co-operation of which all North America can be justly proud."

The Canadian prime minister, R. B. Bennett, said that the treaty would be ratified by the United States senate before it is submitted to the Canadian parliament for approval and that work will probably begin in the year after the ratification by both countries. An international commission will have charge in carrying out the work in the international section. The prime minister said:

"At the present several of the canals which make possible navigation from Lake Erie to the sea are but 14 feet deep. The purpose of the treaty is primarily to provide 27-foot canals for ocean going ships and lage freighters so that these may carry cargo up and down without breaking cargo.

### International Section of Waterway

"The treaty deals only with that section of the St. Lawrence river which constitutes the boundary between the state of New York and the province of Ontario, which is known as the international section of the river.

"In this section, which is 115 miles long, there is a drop of 85 feet in the river. The treaty provides for the building of two dams, one concentrating a head of 25 feet at Crysler island and the other concentrating a head of 65 feet at Barnhart island.

"In this manner a double stage development is assured instead of the single stage development which was at one time under consideration. The

(*Continued on Page* 20)

# S. S. LURLINE

## Third Matson Liner

### Launched at Quincy

AT THE Fore River plant of the Bethlehem Shipbuilding Corp., Quincy, Mass., the new express passenger liner LURLINE, third of the new Matson liners, was launched on July 18, 1932, at noon, just one year from the day when the MARIPOSA, first of the trio, entered the water, and from the same slip in the same shipyard. She is a sistership of the MARIPOSA and the MONTEREY, both of which are now in service between California and Australia.

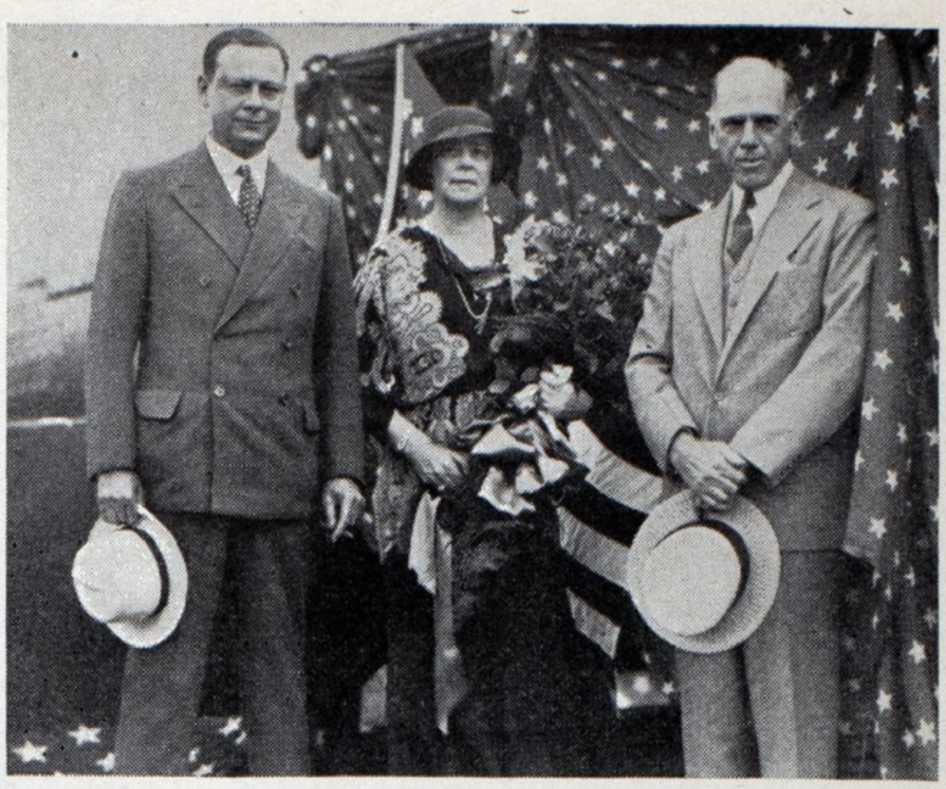
The vessel was christened by Mrs. William P. Roth, wife of the president of the Matson Navigation Co. The choice of Mrs. Roth as sponsor for this ship, the third to bear the name LURLINE, is singularly appropriate, since Mrs. Roth is the daughter of the late Capt. William Matson, founder of the Matson fleet. Her maiden name was Lurline B. Matson. The first ship built to Captain Matson's order was the brigantine LURLINE, and that name was also given to the first steamship built to his order.

The new LURLINE is almost identical to the MARIPOSA and MONTEREY; she is, however, to be operated with the MALOLO on the run between San Francisco, Los Angeles, and Honolulu, providing frequent and luxurious service by ships flying the Matson flag.

The dimensions of the LURLINE are:

| | |
|---|---|
| Length overall, feet, inches | 631 6⅝ |
| Length on D.W.L., feet, inches | 628 0 |
| Length between perpendiculars, ft. in. | 605 0 |
| Beam, molded, feet, inches | 79 0 |
| Depth molded to "C" deck, ft., in. | 52 9 |
| Draft molded to D.W.L., ft., in. | 28 0 |
| Displacement to D.W.L., tons | 26,141 |
| Normal shaft horsepower | 22,000 |
| Service speed, designed, knots | 20½ |

A slight rearrangement has been made in the passenger quarters of the new ship, and stateroom accommodations are fitted for 443 first-class passengers and 229 cabin class. The same high quality of accommodations found on the earlier ships will be maintained on the LURLINE, the rearrangement consisting chiefly of the omission and relocation of certain rooms and suites.



*Left to right—W. P. Roth, president of the Matson Navigation Co.; Mrs. W. P. Roth, sponsor of the S. S. Lurline; and E. G. Grace, president of the Bethlehem Shipbuilding Corp. Ltd.*

The machinery of the LURLINE will be the same as that of the MARIPOSA and MONTEREY, both of which performed exceptionally well on trial and in actual service. Briefly, twelve oil-burning Babcock & Wilcox boilers supply steam at 375 pounds pressure to two sets of turbines, each set driving a propeller shaft through single reduction gearing. Each set of turbines comprises three units, high, intermediate, and low pressure.

The keel of the LURLINE was laid on Oct. 3, 1931, in the same slip where the MARIPOSA was built. Completion is expected about the last of the present year and she is scheduled to sail from New York on her maiden voyage the middle of January.

The ship was checked by chain drags according to the practice of the Fore River yard. The checking problem here was practically the same as that for the MARIPOSA, it being necessary to stop the ship completely not more than 200 feet from the way ends. Due to the entire success of the launching of the MARIPOSA, the arrangements were practically duplicated for the LURLINE. The amount of chain used for drags totalled 364 tons. The arrangement provided six piles of chain on each side of the ship, two piles each of 16, 25, and 50 tons. Four steel wire drag lines were used on each side, the first being 1¾ inch diameter and the others 2¼ inches diameter. Each of the 50 ton drags was connected to a separate 2¼-inch drag line; the lighter drags were arranged two to a drag line, the second being drawn by a pendant through the shackle of the first.

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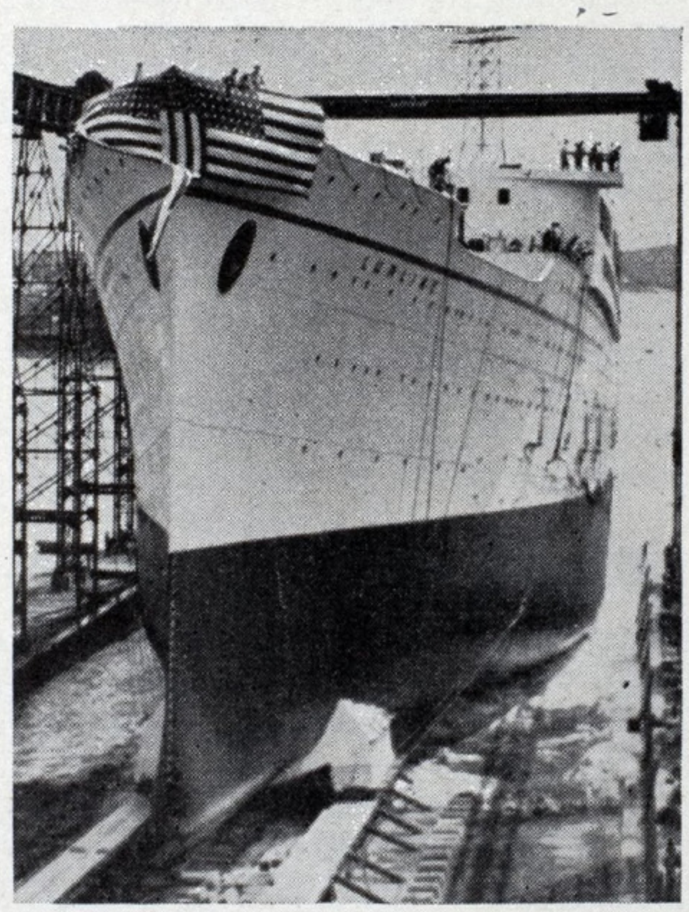
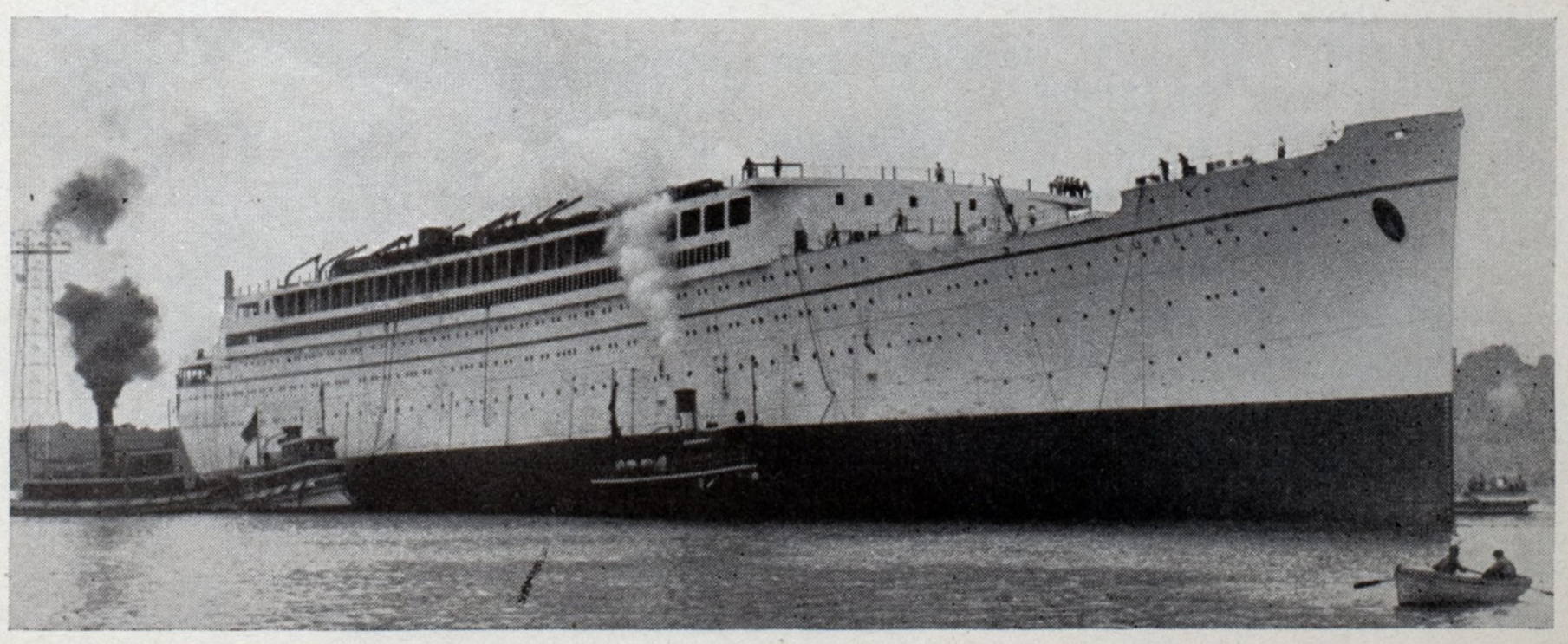




*The S. S. Lurline shortly after launching, July 18, 1932, at the yard of the Bethlehem Shipbuilding Corp., Quincy, Mass. Above, center, the Lurline sliding down the ways*

# GEORGIC, Largest British Motorship

## Arrived in New York on Maiden Voyage July 3

*WELL-ROUNDED bridge front on the* GEORGIC *screening a delightful palm court. This semiopen air lounge with windows all around set low enough to give an unobstructed view of the sea is one of the novel features in which the* GEORGIC *differs from her near sister ship, the motorship* BRITANNIC. *The palm court is decorated in jade green, blue, and ivory. Chinese lanterns and Chinese baths filled with plants add to the attractive features of this space.*

ON JULY 3, the latest and largest British motorship, the cabin liner GEORGIC of the White Star line, arrived in New York harbor on her maiden voyage from Liverpool. The GEORGIC is a sister ship of the BRITANNIC, though there are some important differences. Her gross tonnage is 27,759 as compared with 26,944 tons for the BRITANNIC and she therefore supersedes the latter as the largest motorship under British registry. The principal particulars of the new vessel will be found arranged in tabular form on this page. The GEORGIC was built, by the well known shipbuilder, Harland & Wolff, at Belfast and is the latest of a number of famous vessels built by this company for the same owner. She has joined the BRITANNIC in the transatlantic service of the White Star line between Liverpool and New York, sailing from the former port on her maiden voyage June 25, in command of Capt. F. F. Summers, who also had the distinction of bringing out the BRITANNIC, which in her two years of service has demonstrated the success of diesel propulsion for large liners in this run. The BRITANNIC in these two years has proved her popularity in the North Atlantic trade, with a record of 30,000 passengers carried, a large proportion of whom are Americans.

### New Ideas Incorporated

In the design of the GEORGIC many of the developments considered innovations on the BRITANNIC and which have met with marked success in service, have been carried a step further. The GEORGIC is slightly larger than her sister ship and she has accommodations in three classes, cabin, tourist and third for 1636 passengers. She resembles the BRITANNIC in her smart appearance and has a straight stem, cruiser stern, two large squat oval funnels and slightly raked pole masts. A new feature on the GEORGIC is a curved, streamline bridge front enclosing a delightful passenger space known as the palm court, shown in one of the accompanying illustrations.

To the much discussed controversy as to the suitability of diesel power in larger passenger liners, this vessel furnishes another superb practical example for those favoring diesel power with an anticipation on their part that her performance will confirm and still more solidly establish the good record made by her sister ship. The GEORGIC'S propelling machinery built and installed by Harland & Wolff consists of two, 10-cylinder, four-stroke cycle, double acting, heavy oil engines of Harland-Burmeister & Wain type. The cylinders are fresh water cooled and the pistons are oil-cooled. Each engine direct connected to a propeller develops 10,000 brake horsepower at 110 revolutions per minute. The cylinder dimensions are 840 millimeters (33.07 inches) bore by 1500 millimeters (59.05 inches) stroke. Four independent air compressors installed in the auxiliary engine room, each driven by direct connected four-cylinder Harland-Burmeister & Wain diesel engines furnish the injection air for the fuel oil for the main engines. These units also furnish compressed air for maneuvering purposes.

There are two separate engine rooms, one for the main propelling machinery and its immediate auxiliaries. The second, the auxiliary engine room, contains the four compressor units mentioned above and also at the forward end four 500-kilowatt generators, each direct connected to a six-cylinder Harland-Burmeister & Wain diesel engine. For emergency purposes there is a 75-kilowatt diesel driven generator on the upper deck for supplying current for lighting and power needs when the main sets are out of action. It is interesting to note that there is a total of over 160 miles in length of electric cables.

| | |
|---|---|
| Owner | White Star Line |
| Builder | Harland & Wolff Ltd. |
| Launched | Nov. 12, 1931 |
| Delivered | June 13, 1932 |
| Classification | Lloyds Register of Shipping |
| Length between perpendiculars, ft., in. | 683 7 |
| Beam molded, feet, inches | 82 5 |
| Depth molded, feet, inches | 48 7 |
| Draft, feet, inches | 35¼ |
| Gross tonnage | 27,759 |
| Net tonnage | 17,000 |
| Cargo capacity, tons, d.w. | 13,894 |
| Cargo capacity, cubic feet | 631,200 |
| Passenger accommodations, perons | 1636 |
| Classes | Cabin, tourist and third class |
| Propellers | Two |
| Propelling machinery | 2 diesel 10-cyl. engines |
| Shaft horsepower, total, b.h.p. | 20,000 |
| Revolutions per minute | 110 |
| Speed, service, knots, about | 17 |

### Waste Heat Installation

One of the features of the GEORGIC is the complete revision of the design of the waste heat installation used on the BRITANNIC. Exhaust gas boilers were supplied by the Clarkson Thimble Tube Boiler Co. Ltd. Two large size boilers are installed, each of which accommodates the exhaust gases from one engine. There is also one boiler to take the exhaust gases from the compressor engines and another to take the exhaust from

the auxiliary engines. These boilers are all of riveted construction throughout and have a large annular space permitting inspection and overhauling. The capacity of the main boilers is about 5000 pounds of steam per hour each, and the two auxiliary boilers together give about 3600 pounds of steam per hour. Each boiler is fitted with an automatic feed regulator. In addition there are two single ended cylindrical boilers fitted with the Todd system of oil burning.

The interior arrangement and decoration of the GEORGIC is distinctly modern. Passengers are accommodated on five decks with a promenade and sun deck as additional space for passenger use. Generally the cabin class is accommodated amidships, third class forward, and tourist class aft. Interior decoration was carried out by Heaton, Tabb & Co., London decorators. Unlike any other ship of the line, the GEORGIC is in the style of her own day. Brilliant color and striking contrast are the keynote of the plan which makes use of the best elements of modern decoration, a radical departure from older days.

### Cabin Dining Saloon

The cabin dining saloon is located on C deck somewhat forward of amidships. Ceiling wax red, ebony and ivory have been effectively combined in the color scheme and softly diffused light adds depth and richness.

The walls of the lower part of the room are divided into bays with broad pilasters covered in leather or coral red, while the walls generally are in varying shades of ivory. The windows on the port and starboard sides are in large sheets of engraved glass in shades of gold and green, and are lighted from behind at night. The chairs are done in green lacquer and upholstered in ivory moquette.

BRITANNIA may not rule the waves as she did in former days, but she is still the most potent single factor in world shipping. As an experienced leader in maritime affairs the policy and practice of her great steamship lines in naval architecture and marine engineering are of the keenest interest to all shipping men. Nearly two years ago the White Star line placed the Britannic in commission as the first motor passenger liner sailing from the United Kingdom to America. As the then largest British built motor vessel her performance was closely watched. The new liner justified the judgement and faith of builder and owner and in spite of the depressed conditions she has been a popular ship and well booked. She has so well lived up to expectations of success that the owner in now bringing out her sister ship, the Georgic, has very solid reasons for believing that this new liner will be even more popular and commercially an even greater success.

Editor's Note

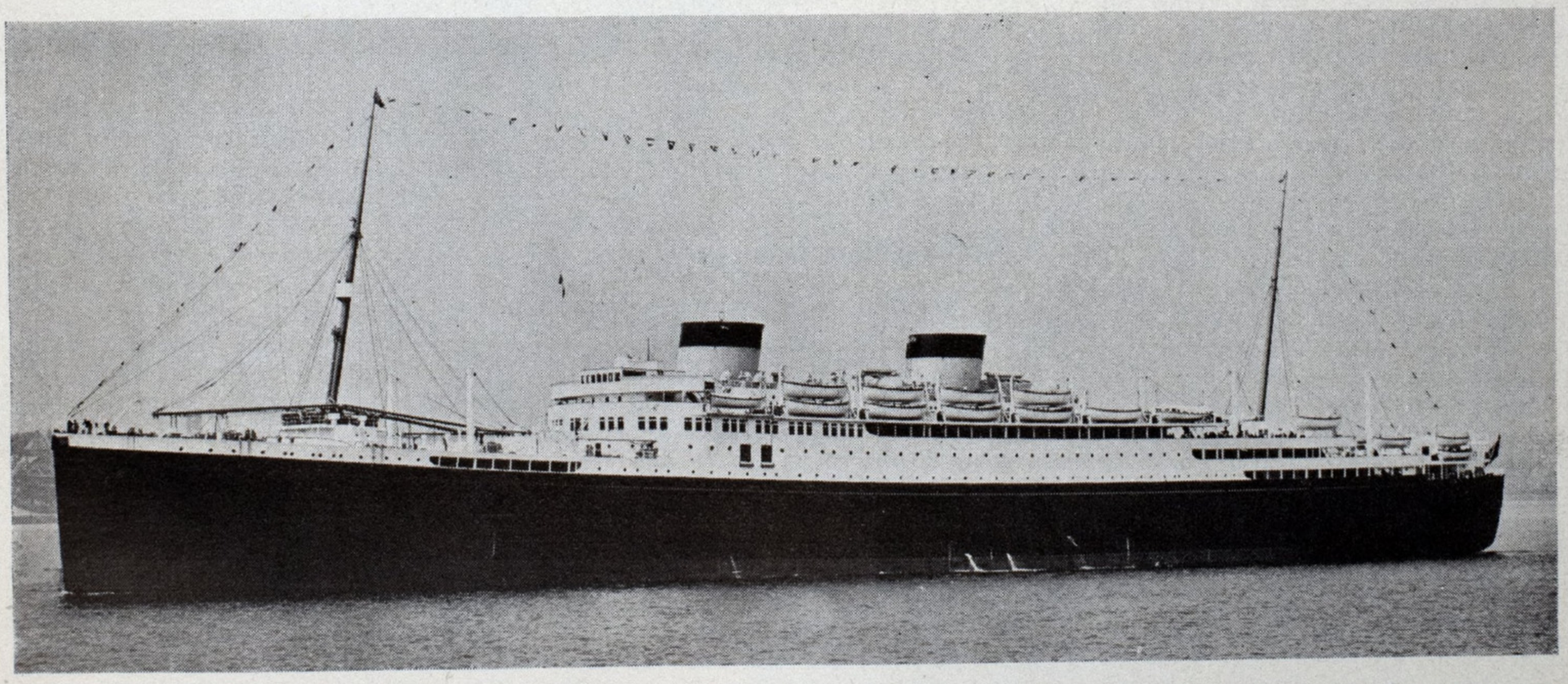
Coral, black and green in broad chevrons on an ivory background form the attractive geometric design of rubber floor covering. In the center of the after end is a cold buffet in ebony with touches of green and gold, attractively lighted and surmounted by a large mirror. The ebony doors and screen at the forward end give the note of sharp contrast and shock which distinguishes the modern style.

The main embarkation entrance is immediately forward of the dining saloon. Two wide staircases, port and starboard lead to the main passenger accommodations. A passenger elevator communicates with all decks. On the port and starboard sides are recesses brilliantly lighted by concealed lights from above. On either side are ebonized embarkation doors. The flooring of rubber of ivory, green and red is laid in a pattern of squares and diagonals on a broad scale.

Cabin class entrance on B deck is arranged as the business center of passenger life. Here are located offices of the purser, chief steward, information, mail and baggage master and wireless. There is also a well arranged shop near the elevator. An arch recess contains a fireplace and there are recesses for settees and chairs.

Near the entrance on A deck are located a beauty parlor and barber shop. These are designed with small horizontal shop windows in a large flat surface of black relieved with lines of vermilion.

On the promenade deck are the principal public rooms. A new and attractive feature is the spacious palm court arranged for dancing, lounging and promenading. The palm court is also an observation room with glass windows all around giving an unobstructed sea view. It



*Twin screw M. S. Georgic, 27,759 gross tons, largest British motorship. Latest addition, White Star line's New York-Liverpool service. Sailed on maiden voyage, Liverpool June 25, arrived New York, July 3*

is a simple semiopen air apartment with a pleasant color scheme in jade green, blue and ivory, with some antique Chinese baths and lanterns grouped near the center of the after end.

### Special Lighting Effects

Special study has been given to the lighting throughout the public rooms and a number of new and ingenious devices have been used to obtain a soft diffused light. Few fittings have been used as the lights are incorporated in the design and form a part of it.

Directly aft of the palm court is the forward cabin class staircase and entrance decorated in shades of green and deep toned ivory, with a marble floor in a dignified design.

The cabin class lounge, which is the most important public room has a central space for dancing with a high dome above it. Broad wall spaces are filled with decorative paintings. Windows on the sides are hung with silk damask curtains in pale shades of pearl and blue on an ivory background. There are a number of interesting pieces of modern furniture and numerous easy chairs and settees in fine fabrics. Facilities for moving pictures are installed. For dancing there is a resilient parquet floor. In alcoves around the walls are groups of chairs and settees for spectators.

From the lounge to the smoking room is a long gallery, an agreeable place to take coffee after a meal. This space is characterized by novelty in design and effective use is made of concealed lights to obtain unusual decorative effects. The color scheme is blue with vellum colored hard wood veneer wall, against which are set cabinets in ebony, walnut and old gold. On the floor are bright rugs in striking geometric design and decorative pictures.

From this long gallery opens the after staircase. Here also removed from the general public rooms is the card room. The treatment is masculine and the furniture is in ebony and walnut with panels of dark blue in the chair backs.

As on other modern liners, the young traveler has not been forgotten. There is a delightful playroom, the feature of which is a large doll's house complete with stairs, bathroom, kitchen and all the equipment for a little housekeeper. The fun of playing store may be indulged in by the boys in a fully equipped miniature shop occupying another corner of the room. Fairy tale murals form a charming background in this floating playroom.

### Cabin Smoking Room

The cabin smoking room is unique in its conception and is the most interesting example on the ship of the new principles of decoration. The horizontal, alternating red and black panels that form the walls are not a slavish immitation of boiler plating, but an artist's abstraction suggesting the surroundings in which the room is placed. Two large leather settees at either side of the fireplace are heavily studded with large nails suggestive of the rivets in a ship's plates. The color scheme has been worked out to retain the comfortable effect of an old Tudor smoking room with something masculine and sporting about it notwithstanding its novelty.

Off the smoking room is the cabin class veranda with a cocktail bar, provided with stools. Lighter in tone than the smoking room, the after end is arranged to open to the deck in fine weather, and to a porch when the weather is unfavorable.

A large tiled swimming pool has ample space around it for spectators and is cleverly lighted to enhance the sparkle and translucency of the sea water.

The gymnasium has been suitably decorated in simple modern style, the walls painted in shades of brown, gradually lightening in effect as the cornice is reached. A coved ceiling springs from the back of the cornice from which concealed light is reflected easily over the room.

Passageways to passenger accommodations are carefully designed in bays divided by pilasters and finished in an agreeable light color scheme to overcome the drab effect these long passages are so liable to have.

### Homelike Passenger Suites

A number of suite rooms are arranged on A deck in varying color schemes and styles of decoration. One of these has a sitting room in pale peach color with furniture in natural sycamore, with deeper peach red bands. The bedroom adjoining is painted in tones of graduated amber with a polished paneling inset as a background, carved with motifs after Japanese artists. Each suite has a lobby connecting the various rooms, with a useful space for the wardrobe trunk, and a well appointed private bathroom paneled in pastel colors. Other suites and single cabins are furnished in a variety of styles and color schemes. All the staterooms in cabin, tourist and third classes have hot and cold running water, and many baths have hot and cold showers.

Tourists and third class public rooms and entrances have received special attention, and care has been given to make them comfortable and attractive. In the tourist class smoking room the decorators departing from modern style have created a room of great charm and friendliness. Modeled on the lines of an old English farmhouse of the sixteenth century, this room is in half timber and rough plaster, with an old tiled floor, antique furniture and casement windows of leaded glass.

The tourist writing room with many writing tables and comfortable settees and easy chairs is painted in shades of jade green, making a restful and pleasant retreat for those who like quiet hours at sea.

In the tourist accommodations the lounge walls are paneled in veneered polished hardwood and the windows are hung with bright pleasant colored curtains. The furniture is in harmony with the general scheme and there are comfortable club settees, easy chairs and card tables, a large bookcase in the after end is filled with many kinds of books. The dining saloon for this class is of ample size, is cheerfully decorated and is equal to many first class rooms on lesser liners.

### Third Class Accommodations

Third class public rooms have been completed in a pleasing manner. A new feature has been introduced in the form of an attractively paneled large main entrance from which wide central staircases lead down to the accommodations below.

The smoking room is finished in old oak and plaster. Rough hewn oak timbers on the walls, oak paneling, beamed ceiling and comfortably upholstered settees give it an old world air of comfort and hospitality.

The third class ladies' room is a simple drawing room, with wall paneling painted in a soft green color, with a dado in a deeper shade. The third class dining saloon has an ivory frieze above wall paneling of warm brown, relieved with pilasters in a darker shade. Dark brown mahogany sideboards give a note of richness to the room. The chief features of the third class children's playroom are the concealed electric lighting and the walls which are painted with characters and scenes from many nursery rhymes. A Wendy hut with quaint windows, picturesque roof and a swing carries out the playroom idea.

Radio equipment is installed inside the aft funnel which is a dummy. The top of the funnel is open and with the aerial fitted on the roof of the cabin inside, the screening will completely eliminate electrical interference from the ship's motors. Marconi equipment includes both long and short wave transmitters affording direct wireless communication with shore at any time and from any position. The long wave transmitter is effective up to about 1500 miles from land and the short wave length from that point to world-wide range.

The GEORGIC is fitted with sound deadening insulation at outside of casings and other decks in the vicinity of the engine room to prevent sounds from being transmitted to passenger accommodations.

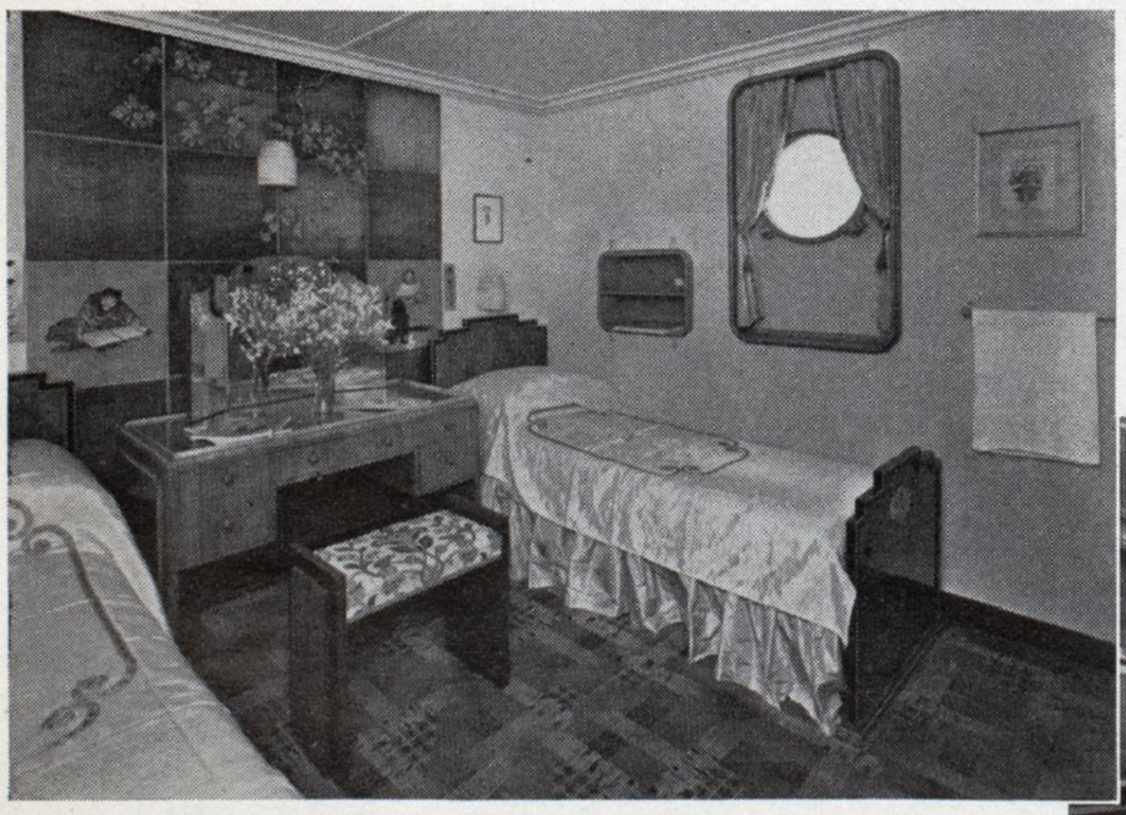
Ventilation is provided for by 87

Below, Cabin Dining Saloon

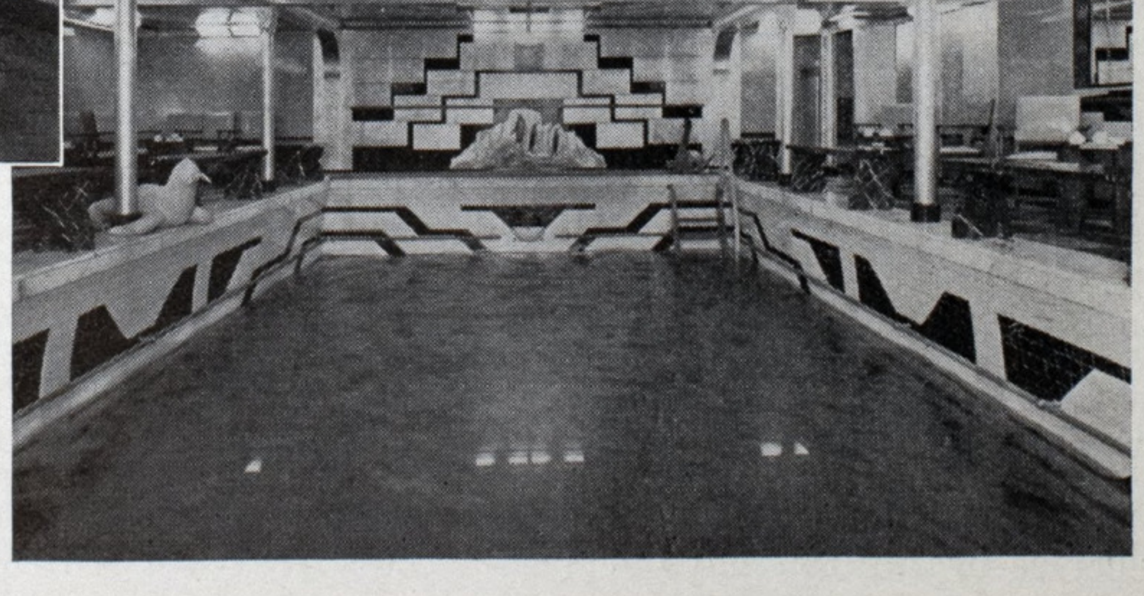
Above, Cocktail Bar in Veranda Cafe

# Motorship Georgic Interiors Cabin Class

Above, Cabin Lounge



Above, Bedroom of Suite



Right, Swimming Pool

electrically driven pressure fans, ranging in size from 10 inches to 60 inches in diameter. Over 45 of these fans are fitted with heating elements by means of which the vessel can be kept comfortably warm in the coldest weather. These air heating fan units are supplemented by electrical heaters distributed throughout the accommodations.

The hull is subidivided by 14 watertight bulkheads. Fresh water, fuel oil and water ballast are carried in the double bottom. There are eight cargo holds served by 16 cargo booms of tubular steel construction. Sixteen electrically driven cargo winches are installed. There is also a cable lifting capstan suitable for handling cables up to 3 7/16 inches.

An electric hydraulic type of steering gear built by the shipyard is fitted with Hele-Shaw pumps and is operated with telemotor control. There is an electric helm indicator. The anchor equipment consists of three 10-ton stockless anchors of all-forged type.

For handling the lifeboats the equipment was supplied by Welin-Maclachlan Davits Ltd. This equipment consists of 20 sets of quadrant type davits, 10 of which handle nested lifeboats. Six sets are installed for handling single lifeboats. Four sets of the over-frame type are installed on the island decks.

**Full Navigating Equipment**

There is one standard compass of Kelvin type, also a Kelvin motor driven sounding machine. In addition the vessel is supplied with a gyro compass of Sperry type. A submarine signal receiving set is installed arranged for distance finding in conjunction with the Marconi wireless equipment. The submarine signal is supplied by the Submarine Signal Co. Ltd., London. Loud speaking telephones of combined transmitter and receiver type are installed on the navigating bridge and on the forecastle and docking bridge.

The pumping equipment is complete, including main and auxiliary circulating pumps, forced lubrication pumps, fresh water pumps, general service pumps and emergency bilge pump. In the 'tween deck there is installed a bilge and ballast water separator of sufficient capacity to take care of all the bilge and ballast water discharge of the vessel. Electrically driven centrifuges are fitted—seven for the oil fuel and six for lubricating oil. These are of the Sharples type and are each driven by one 2½-horsepower motor. The Vacuum Oil Co. Ltd. received the contract for the supply of lubricating oil.

Refrigeration has been given special attention and the equipment was supplied by J. & E. Hall Ltd Insulated cargo spaces are found in Nos. 2 and 3 lower and orlop 'tween decks and No. 3 lower orlop 'tween decks. Each of these spaces is divided fore and aft into compartments. The total insulated cargo space is about 83,600 cubic feet. A good portion of these spaces is air cooled and can be maintained at 10 degrees Fahr. for frozen goods or at a higher temperature which may be necessary for fruit. In No. 3 orlop and lower orlop 'tween decks the insulated spaces are fitted with brine coils and are suitable for carrying meat, fish and other chilled and frozen goods. In addition there is also an ice storage space of 1260 cubic feet. The provision chambers are divided into 21 large and small rooms and cupboards.

Two large vertical enclosed marine type $CO_2$ refrigerating machines driven by electric motors running at 350 revolutions per minute supply the refrigeration. The shipyard supplied electric motors and controllers for driving the $CO_2$ machines and also the necessary pumps and fans.

## Soon Ready for Launching

H. H. Raymond, president of the Colombian Steamship Co. 17 Battery place, New York announced on May 23 that the company's new fast steamers COLOMBIA and HAYTI will be launched on Aug. 6 and Sept. 17 next respectively at the yards of the Newport News Shipbuilding & Dry Dock co. and will be completed in time to inaugurate a new fast express service between New York, Hayti, Colombia and Panama this winter.

Present plans call for the COLOMBIA to sail from New York, Nov. 15 on her maiden voyage to the West Indies, and she will be followed by the HAYTI on Dec. 15. Thereafter each of the two ships will maintain sailings from New York every 21 days. The company plans to increase the sailings to one a week when they add a third vessel later on.

The construction of COLOMBIA and HAYTI marks another milestone in the development of the new American merchant marine and is an additional triumph for the Jones-White Bill of 1928, as the building of these two luxurious liners has been made possible by the mail contract and construction loans which have been granted to the Colombian line under the provisions of the bill.

## Captain Candy Retires

Capt. Henry A. T. Candy, commander of the turbine electric liner PENNSYLVANIA, flagship of the Panama Pacific line's fleet of intercoastal liners will be retired at the end of the present voyage when his ship arrives at New York Aug. 1, from California.

## Liner Bremen Completes Three Years Service

On her arrival at Bremen on July 15, the North German Lloyd express liner BREMEN completed three years of regular and successful crossings of the North Atlantic. During this period in 55 round trips she carried 147,890 passengers, or an average of 2498 for each transatlantic round trip, and covered 405,460 miles

When the BREMEN first sailed from Germany on July 15, 1929, a new era began in transatlantic travel. She arrived in New York on July 22 after a record crossing of 4 days 17 hours and 42 minutes. From noon on the fourth day to noon on the fifth day the BREMEN covered 713 miles, and on the day of her arrival she attained a speed of 28 knots. Some 50,000 people visited her the first day in port.

On her return trip when she left New York on July 27, the BREMEN set a new record to Plymouth of 4 days 14 hours 30 minutes, a distance of 3082 miles, at an average speed of 27.91 knots. In October of 1929 the BREMEN lowered her westward record by 18 minutes, making the crossing from Cherbourg to Ambrose lightship in 4 days, 17 hours and 24 minutes. On Feb. 1, 1930 she crossed from New York to Cherbourg in 4 days and 18 hours, setting a new record for the eastward crossing which has not yet been surpassed. In October of that year another westward record of 4 days 17 hours and 18 minutes was established; and on Feb. 29, 1932, still another record, 4 days, 17 hours, 10 minutes.

## Foreign Bunkering Stations

Chairman T. V. O'Connor of the United States shipping board announces the release of an enlarged directory of foreign bunkering stations, prepared by the board's bureau of operations in cooperation with the departments of commerce and state. The new directory, which is a revision of the one issued in 1929, contains authoritative current information on coal and oil fueling facilities at over 300 foreign ports.

A new 100-page section contains charges and dues incurred by vessels calling at foreign ports for bunkers only. Included among these are rates for pilotage and towage; light, harbor, quay and anchorage dues; and other national and local charges regularly assessed against vessels.

D. S. Brierley, until June 30, 1932 with the United States Salvage association as resident surveyor at Baltimore, has established an office at 1105 Continental Bldg., Baltimore as a consulting engineer and marine surveyor for hull, engine, cargo and general appraisal.

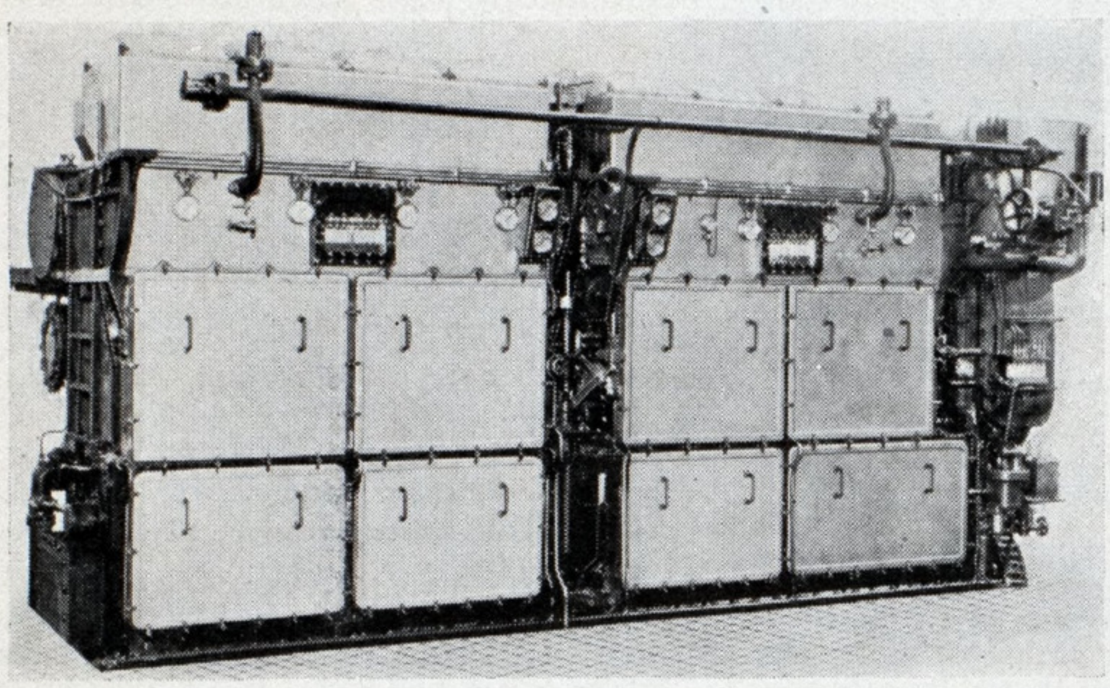
# DANNEBROG, Royal Danish Yacht

## Twin Screw Diesel, Built at Royal Naval Dockyard

BOTH in design and execution the recently completed Royal Danish yacht DANNEBROG is an example of experienced workmanship of the highest order. The DANNEBROG is a twin screw diesel yacht designed and built by the Royal naval dock yard at Copenhagen. Throughout, including elaborate and beautiful interior finish, she is the product of Danish craftsmanship. In safety requirements she meets the code of the international convention for safety of life at sea 1929.

### General Particulars

| | |
|---|---|
| Builder | Royal Naval Dock Yard |
| Sea trials commenced | May 3, 1932 |
| Requirements | 1929 Convention of Safety |
| Length overall, feet, inches | 244 5 |
| Beam, molded, feet, inches | 34 1½ |
| Draft, feet, inches | 11 9¾ |
| Displacement, tons | 1225 |
| Radius at 12 knots | 7500 |
| Propelling machinery | Two diesel engines |
| Total indicated horsepower | 1700 |
| Speed in knots, over | 14 |
| Propellers | 2 |
| Crew | 42 |



*One of the two modern diesel engines fitted on the Royal Danish Yacht Dannebrog. This engine embodies experience gained in building many units over a long period of years*

General particulars are noted in the accompanying table. The new vessel has three decks. The main deck is continuous throughout her entire length. Below the main deck is a cabin deck forward and aft of the engine room which is located amidships. An upper deck is continuous from the forward end for nearly the entire length of the vessel. Bridge, pilothouse, and wireless station are all located in a deck house, which also includes officers' accommodations, on the upper deck forward of the funnel. In a deckhouse aft of the funnel there is a library, a smoking room and a veranda.

The DANNEBROG has a clipper stem with bowsprit and an overhanging elliptical stern. Six watertight bulkheads, with three Atlas sliding doors operated from a central point in the ship, divide the hull into seven compartments. Included in the small boats' equipment are two motor boats, two large lifeboats, and two smaller boats.

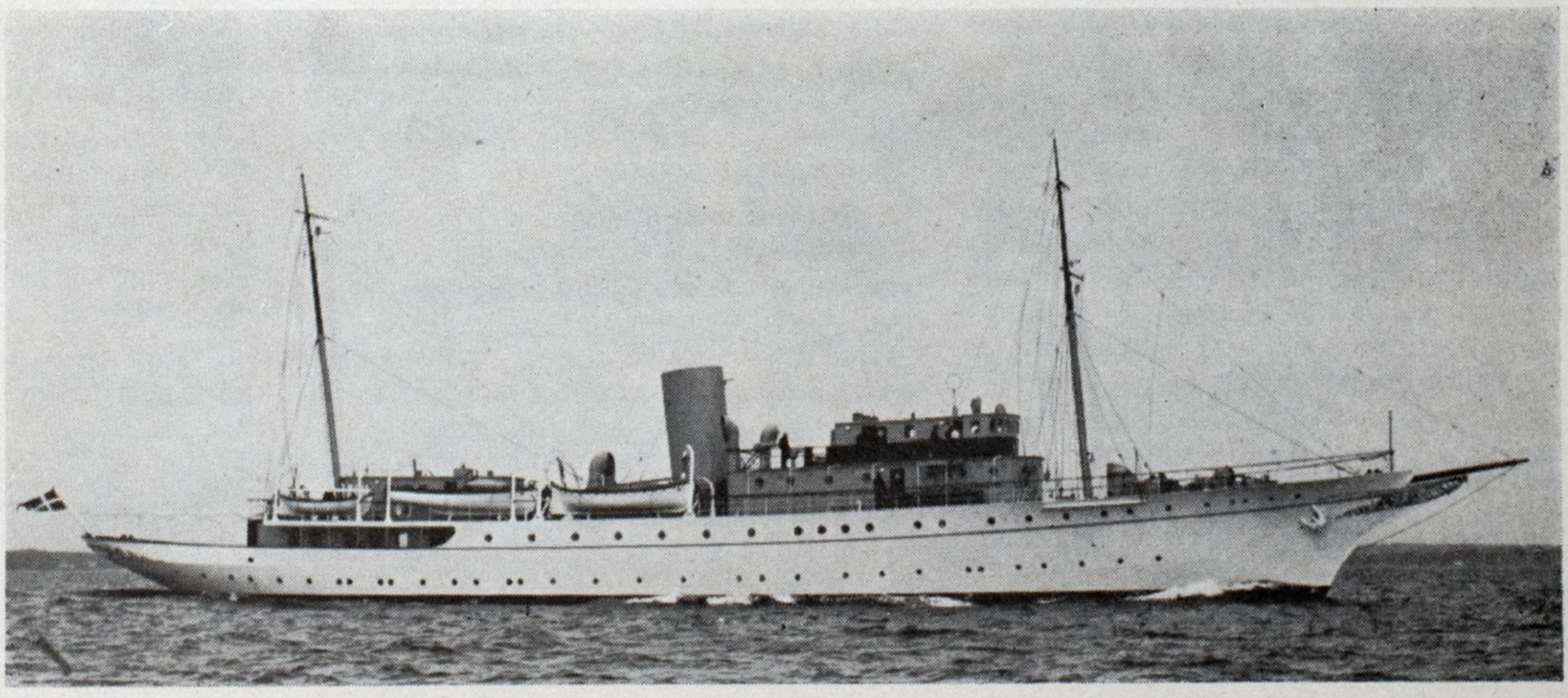
Accommodations for the Royal family, sumptuously decorated and furnished, are located around the hall on the main deck, communicating with the wide promenade leading to the dining saloon located forward of the engine room. Included in these accommodations are a living room, a study and private rooms with doors leading out to a veranda on the after deck. The interior finish includes polished Italian hazel in natural color with trim of palisander. The staircase is of bronze with banister and base of palisander. The furniture of the hall is made of the same wood. The living room is fitted with large windows and wall panels in light shades with silver plated fillets. A black polished grand piano is placed at the after wall.

Other features of the interior finish in the study are, natural finish black wood and mahogany furniture covered with dark blue leather. Natural color sycamore with dark fillets of maple and lower panels of olive wood make up the interior finish of the Queen's private room. The furniture is of light brown birch and the colors are in blue and yellow. The staterooms of the main suites are in white, gray, green and rose colors and the furniture, made by Danish cabinet makers, is of mahogany, hazel and birch. The fabrics are also of domestic manufacture. The floors are covered with ruboleum in decorative designs.

In addition to the accommodations for the Royal family there are eight cabins for guests and attendants.

The propelling machinery consists of two Burmeister & Wain, two-stroke, single acting, enclosed, forced lubricated diesel engines of the trunk piston type. Each engine has eight cylinders with a bore of 11 inches and a stroke of 19.7. The two engines together develop a total of 1700 indicated horsepower at 220 revolutions per

(*Continued on Page* 16)

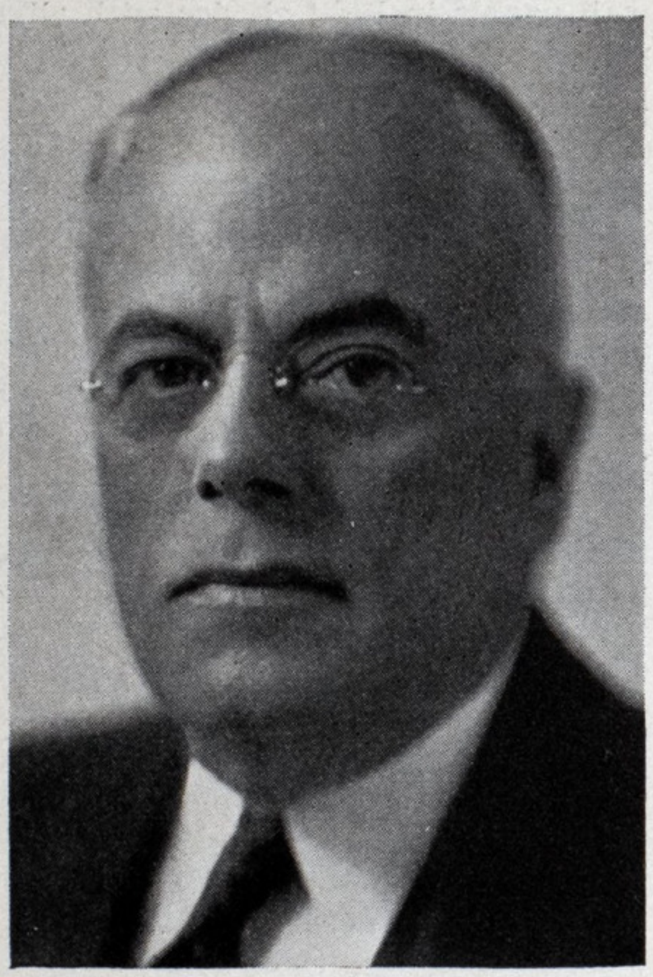


*Royal Danish Yacht Dannebrog. A twin screw sea going vessel propelled by two diesel engines direct connected to propellers. On trials a speed of 14.75 knots was attained*

## Steamship Owners Head, H. B. Walker, Dies

AN ACTIVE and influential figure in steamship affairs, Herbert Brooks Walker, president of the American Steamship Owners' association, died on June 23 at his home, 575 Park avenue, New York city, in his sixty-third year. He is survived by his wife, a son, two sisters and a brother. He was the son of Capt. George M. and Lavinia (Brooks) Walker and was born in Philadelphia in 1869. He was educated in public and private schools.

Mr. Walker's entire life was devoted to shipping activities, beginning as an office boy with the Old Do-



minion Steamship Co., at the age of 15. By gradual promotions he became traffic manager, and in 1907, at the age of 38, he was elected president and general manager. In that office he won a reputation as an able steamship operating executive. In 1926 he was elected president of the American Steamship Owners' association, an organization including a majority of the privately owned American steamship lines whose members control in excess of 4,000,000 gross tons of shipping.

The President of the United States appointed Mr. Walker a delegate to the international conference on safety of life at sea, held in London in 1929. He was also appointed by the President as a delegate to the international load line conference, and headed the American delegation. This conference met in London in 1930. In 1928 the secretary of commerce appointed him vice chairman of the United States load line committee. This committee was formed for the purpose of formulating rules and regulations governing the assignment of freeboard to American vessels.

Among other of his activities he served as a member of the transportation and communication department committee of the United States chamber of commerce; a member of the board of directors of the Maritime Association of the Port of New York and of its committee on steamship affairs; a member of the board of managers of the classification committee of the American bureau of shipping; and as a director of the American Shipbuilders and Shipowners' Mutual Insurance Co. of Philadelphia. He was also a vice president of the American Merchant Marine Library association. His clubs included the Whitehall club and India House and he was a member of the society of Naval Architects and Marine Engineers.

Through his character and ability Mr. Walker had arisen to a position of influence in American shipping. He fought effectively for the best interests of the merchant marine and his leadership and counsel were highly valued among all shipping men.

## Dannebrog, Danish Yacht

(*Continued from Page* 15)

minute. Fuel injection is mechanical.

Auxiliary power is provided by two 2-cylinder 2-stroke, single acting Burmeister & Wain diesel engines operating with mechanical injection. These engines are also of the enclosed forced lubricating type and each develops 100 brake horsepower at about 320 revolutions per minute. Each engine is direct coupled to a direct current generator of 66 kilowatts at 110 volts. In addition to these larger generators there is one 40-kilowatt dynamo driven by a six-cylinder Parsons paraffin engine; one Parsons gasoline engine driving an eight-kilowatt emergency dynamo; and an electric accumulator battery of Exide make with a capacity of 580 ampere hours at 10 hours unloading.

It is interesting to note that the ahead surfaces of the propellers are machined and polished. The after shaft brackets are fitted with Goodrich cutless rubber bearings.

At the completion of the vessel three sea trials were conducted in the sound at Copenhagen. The first two were of a technical nature, and on the first day, May 3, speeds were determined over a measured course with the engines developing a total of 2165 indicated horsepower. The vessel made a speed of 14.75 knots. On the second trial, May 9, the engines were operated for a considerable period developing a total of 1820 indicated horsepower. Maneuvering performance proved to be excellent.

## Baltimore Continues to Hold Third Position

In total export and import tonnage handled during the calendar year 1931, Baltimore retained its position as third United States port. Baltimore also continued as the second national port in volume of import business. These facts were established by a study of foreign trade tonnage of the five principal ports of the country recently completed by the bureau of research of the United States shipping board.

It is true that the general condition of foreign commerce in the year 1931 is reflected in the activity of these ports. All showed material decline, ranging from 20 to 30 per cent in tonnage handled. Baltimore's total exports and imports were 4.742.307 long tons compared with 6,471,654 long tons handled in the calendar year 1930.

## Todd Memorial Services

Memorial services for William H. Todd, late president of the Todd Shipyard Corp., were held at Kismet temple, Brooklyn, N. Y. at 8:00 p.m. on July 21.

Among those who were to speak at the services were Chairman T. V. O'Connor of the United States shipping board; H. Gerrish Smith, president of the National Council of American Shipbuilders; Ira A. Campbell, secretary of the American Steamship Owners' association; and Alfred E. Smith, former governor of New York.

## On Super Liner Design

At the annual meeting of the Society of Naval Architects and Marine Engineers held in New York on Nov. 19 and 20 last year, Theodore E. Ferris, noted naval architect, presented a paper on *Design of American Super Liners.* This paper will rank as one of the most valuable and comprehensive contributions to the transactions since the founding of the society. Members of the society were unanimous in their commendation, both of the substance of the paper and of the generous attitude of the author in presenting it to the industry.

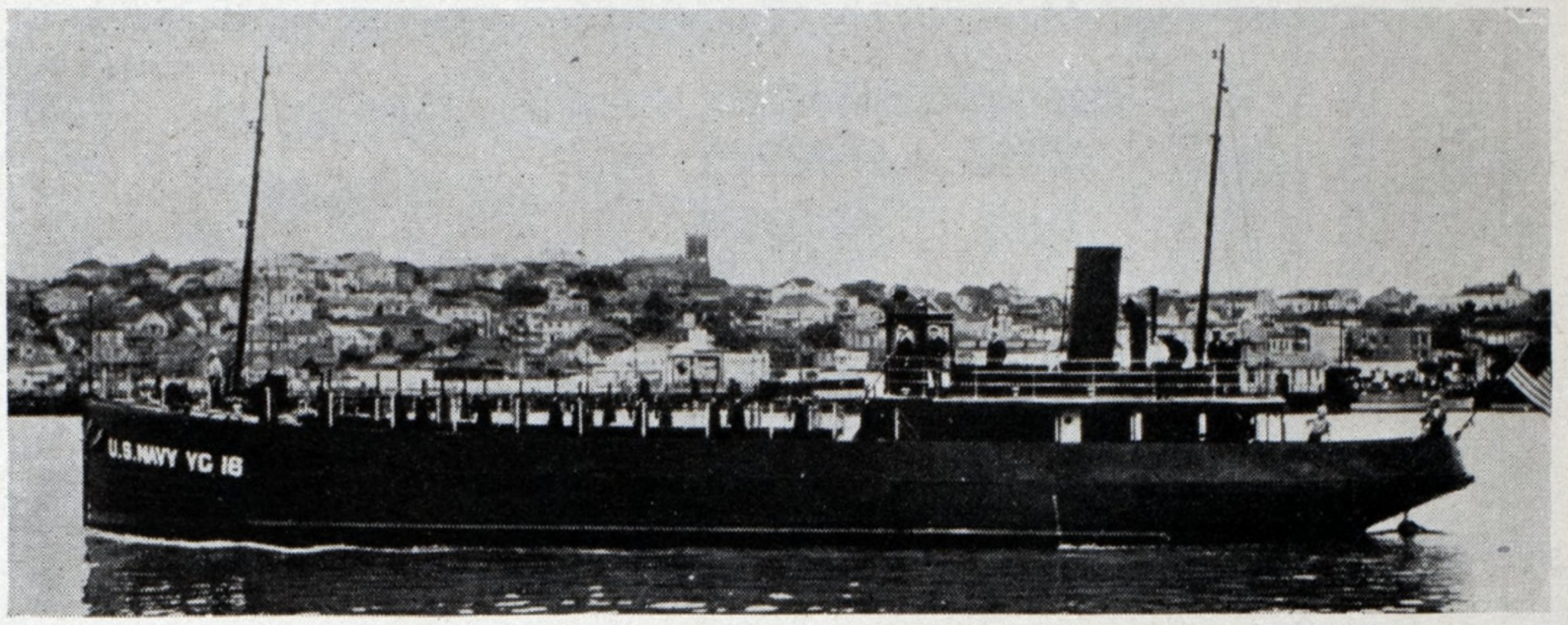
It is therefore of special interest to record here, publication privately by Mr. Ferris of an attractively prepared booklet containing the discussions and comments on his paper. In the foreword Mr. Ferris said :

"This collection of the views of the marine fraternity on the design of the United States lines super liners is presented in testimony of my appreciation to all those who made the project possible and who in any way collaborated in the work. It is further dedicated to the art of ship design and to the American merchant marine of the future."

# ARC WELDED Auxiliary Vessel

## Features of Design and Construction for Electric Welding*

By H. N. Wallin and H. A. Schade




*AUXILIARY vessel for United States navy. A practical example of arc welded ship construction. Methods were initiated and studied with great care*

ARC welding has been in general use by the navy, principally on repair work, since war days, when the sabotaged engines of seized German liners were salvaged by this comparatively new art. It is only since the displacements of naval vessels have been limited by international treaties, however, that the navy has begun to look upon arc welding as a standard method of construction. Displacement limitations, being equivalent to weight limitations, naturally place a premium on methods of construction by which weight may be reduced without loss of desirable characteristics. With this impetus, arc welding is supplanting riveting over a wide range of applications in increasing amounts on each new ship designed by the navy, as it becomes more and more evident that lighter structures of equivalent strength, rigidity and shock resistance may be obtained by this process.

A movement toward the construction of ships of large dimensions entirely by welding is developing along two lines, viz.: the increasing partial use of the process on large ships, and the complete substitution of welding for riveting on small ships. The navy department has extensively participated in both phases, first entering the latter in 1930 when it authorized the construction of two motor tugs, two self-propelled garbage vessels, two sea-plane wrecking derricks, and several smaller vessels by the all welded method.

The construction of one of these craft, a garbage vessel, was undertaken at the navy yard, Mare Island, Calif., and completed Sept. 15, 1931. The hull of this vessel as shown in the accompanying illustration has a conventional ship-shape form with straight vertical stem and transom stern, a length of 118 feet, beam of 25 feet, and full load draft of 5 feet 3 inches. The carrying capacity is 125 tons, which gives a full load displacement of approximately 300 tons. The power plant consists of a 240-horsepower diesel engine which was removed from one of the "K-Class" submarines recently scrapped; the speed of the craft is about ten knots.

As the navy is interested only technically and not competitively, it is believed that a great deal of good can be done in the field of electric welding by making available complete information on the design and construction of this vessel. Lap joints were adopted for all shell seams and as a general rule for all other plate seams throughout the ship. The joggled lap was used, which allows all bulkheads and internal framing to be worked to the molded line. The arguments for lap joints hold for plate butts as well as for seams. However, strapped butt joints were used in order to gain experience with both types of joint.

### Tests To Determine Design

A number of tensile tests were made for the purpose of determining the best design for the plate seam lap joints. Specimens were made from ⅜-inch medium steel plating which on test showed an average tensile strength of 59,630 pounds per square inch.

All specimens failed under tension in the plate rather than by failure of the weld and all but one fractured adjacent to a line of welding. Test results with the various types of joints are shown in the table presented with this article.

While the tests actually made were not sufficiently comprehensive to establish definitely the relative

IT is apparent that there is no field in which arc welding offers greater savings than in the construction of ships. The total of such savings, direct or indirect, during the lifetime of the vessel will be large, and out of all proportion to the saving in first cost. Due to improved design of details of welded structures, better welding equipment and increased production by welders, the saving in first cost in the near future is certain to be even more favorable than at present. Although arc welding is today recognized as a standard method of economical construction in many fields, its real development and application have barely begun.

The Authors

*Brief of paper by Lieut. Commander Homer N. Wallin, C.C. U.S.N. and Lieut. Henry A. Schade, C.C. U.S.N., on *The Design and Construction of an Arc Welded Naval Auxiliary Vessel,* awarded first prize in the second Lincoln Arc Welding Prize competition sponsored by The Lincoln Electric Co., Cleveland, and reported in the July MARINE REVIEW. The complete paper with other prize winning papers will be published in book form by the sponsors.

values of the features under consideration, they provided fair indications of what might be expected and consequently furnished a basis for the design of lap joints to be used. It was decided to use a 1½-inch lap with a full fillet weld on each side of the lap and to use the long joggle.

The longitudinal bar frames (or longitudinals) along the shell, deck are slotted to take the standing flanges of the longitudinals, and the face flanges of the longitudinals are slotted to take the transverses and bulkheads. This results in intercostal face flanges and continuous standing flanges, and the meshing of the slots forms a "lock-joint." Bulkheads stiffeners are spaced to connect by means of brackets to the longitudinals on the bottom plating and under the deck or hopper plating. They consist of 3 x 4-inch angle bars with the standing flange forming a T-joint against the bulkhead plating.

The longitudinals, transverses and bulkheads form T-joints with the shell. The first two were intermittent welded, using the chain arrangement, and the boundaries of watertight bulkheads were continuous fillet welded on both sides. The T-joints between the standing flanges of the bulkhead stiffeners and the bulkhead plating were also intermittent chain welded. The "lock joints" between the longitudinals and the transverses were welded on the outside of the bar only, as watertightness is not required. Intermittent welding was used where neither watertightness nor maximum strength is considered necessary.

The usual method of holding the parts together before welding is to use bolts and bolt holes; the procedure is much like that for a riveted ship, except that fewer bolts are used. It is necessary to lay out and punch the holes in the shop, bolt upon the ways, remove the bolts after welding, and usually to weld up the bolt holes after they have served their purpose. Although this method has apparently been generally used, the decision was made to assemble and erect this vessel without the use of assembly holes for bolts. This decision was influenced by the fact that bolts and bolt holes are applicable only where both faying surfaces can be punched, which could be done on this vessel only on plate seams and strapped butts.

| NUMBER | SIZE OF WELD | TYPE OF JOGGLE | BREAKING LOAD LBS. | BREAKING STRESS LBS/SQ.IN | LOCATION OF BREAK |
|---|---|---|---|---|---|
| 1 | 1/4" | SHORT | 64,120 | 42,735 | |
| 2 | 3/8" | " | 84,160 | 56,100 | |
| 3 | " | " | 80,000 | 53,330 | |
| 4 | " | " | 79,000 | 52,660 | |
| 5 | " | " | 78,180 | 52,120 | |
| 6 | " | " | 75,760 | 50,500 | |
| 7 | " | " | 82,000 | 54,660 | |
| 8 | 1/4" | " | 66,200 | 44,130 | |
| 9 | " | " | 60,100 | 40,000 | |
| 10 | 3/8" | LONG | 91,280 | 60,850 | |
| 11 | " | " | 86,640 | 57,760 | |
| 12 | " | " | 89,230 | 59,480 | |
| 13 | 1/4" | " | 71,000 | 47,330 | |
| 14 | " | " | 78,000 | 52,000 | |

*Test results of various joggled welded lap joints*

### Holding Parts Together

Originally it was intended to use the system of tack-welding employed by some of the German shipyards, consisting of very small tack-welds about the size of a pea, called "pea" welds, spaced about a meter apart. Tack-welds of this size provide a bond which is purposely so weak that the tack-welds break in case appreciable stresses develop in the joints during the finish welding. It was very soon discovered that such "pea" welds are not strong enough to resist even very small shrinkage stresses. The system was modified, and "string" welds were used for tacking, having a length of about 1 inch and a nominal sibe of ⅛ inch, spaced about 12 inches apart. These tacks are strong enough to hold the parts but weak enough to break when shrinkage stresses become excessive.

All welders assigned to the job were first class welders who had successfully passed the standard qualification test on numerous occasions. Welders were constantly supervised not only in regard to the size and quality of the welds but also in connection with proper current values, cleanliness of the welding surfaces and proper size rod.

It was the practice to assemble and weld up in the shop as many units as considered practicable and advantageous, especially flat assemblies such as bulkheads, transverses and hopper plating.

After experimentally assembling and welding two bulkheads on an I-beam platform, all remaining and flat assemblies were assembled and welded on the bending slab. By using this method, warping of the edges of the plates is easily restrained by dogging them down. Fur-

and hopper are 3 x 5 x 1⅝ x 6-inch angle bars, with the edge of the wide flange against the plating. They are spaced about 2 feet apart and fall on each plate lap and along the middle of each plate. The transverse web frames are spaced from 5 to 7 feet apart. Each transverse is built up of a web about 18 inches deep with a symmetrical face plate double fillet-welded normal to it. The connections between the longitudinals and the transverses or bulkheads are locked together at points of intersection.

The transverses and bulkheads

thermore, the plates being supported at practically every point, there is no tendency to distort resulting from sagging of plates between supports, as there is on the I-beam platform. The intimate contact between the plates and the slab, which is an excellent heat conductor, appears to assist in reducing the heated areas by conducting the heat rapidly away, and this also reduces the tendency to distort. The units are easier to assemble on a flat surface than on the I-beam platform, and the use of a heavy roller for forcing the laps together is made possible.

### Erection Of Hull Parts

In order to compensate for shrinkage, the boundaries of the flat assemblies were left oversize. After shop-welding was completed, the mold was applied and the boundaries marked for trimming. On the bulkheads the waterlines and buttock lines were remarked on the smooth side, to insure accurate lines for properly locating the bulkheads during erection.

The vessel was constructed on keel blocks adjacent to one of the drydocks in suitable position for side launching after being skidded to the edge of the dock. After the three keel sections had been laid on the keel blocks the bottom plating was laid out in a cradle which was built an inch or two lower than the final location of the plating, after which the seams and butts were tack welded. The bottom longitudinals were next set in position and tack welded. Each completed transverse bulkhead and transverse was erected in its proper location, plumbed, and the bottom plating shored or pulled to it.

Since the bulkheads and transverses were slotted to take the longitudinals, and the latter were slotted to take the former it was not difficult to set these transverse parts in their proper locations. When most of the bulkheads and transverses had been erected the side longitudinals were placed in position in the proper slots. The hopper plating was placed in position as soon as all the bulkheads and transverses supporting it had been erected. After the bulkheads and transverses extending above the hopper deck had been erected, the side plating was carried up to the sheer strake. Finally, the deck longitudinals and deck plating were placed in position.

This was accomplished by a variety of methods depending on the conditions. Shores, clamps, wooden wedges, levers, weights, chain falls, were all effectively used. Where the plates had considerable shape it was sometimes necessary to tack-weld a bolt to one part and a clip, through which the bolt could pass, to the other. The use of an air jam backed up by staging proved very successful in forcing plates against framing. On the whole there was very little difficulty in bringing the parts into satisfactory contact for tack welding, and the methods employed were considerably cheaper than the general use of bolts and bolt holes would have been.

The men used are welders capable of both arc welding and gas cutting. One was assigned with each shipfitter, and when thus assigned did no finish-welding whatever. His duties were to do gas-cutting, tack-welding, and temporary welding such as clips, etc., as required by the shipfitter, and when not so employed to assist the shipfitter in a capacity similar to that of a helper. This system eliminated much lost time, since shipfitters were never waiting for a burner or a welder, and welders were not interrupted by calls from the shipfitters to do tacking or temporary welding. One gang composed of shipfitter, helper and combination welder could do the entire job of preparing a part of the structure for the finish-welders after the riggers and shipwrights had done the necessary erecting and shoring.

Since the weather decks have both camber and sheer, fabrication and welding in the shop would have involved mocking up to shape during welding, and this would lose much of the advantage obtainable by dogging down plating to the slab as was done with the bulkheads. Consequently, this work was done on the ways and although it involved a large amount of overhead welding where the longitudinal deck beams weld to the decks, this was not considered a serious problem; the welders apparently are able to produce overhead work very nearly if not entirely, equal in quality and quantity to work done in the flat position. When decks are welded up on the ways it is best to leave the margin oversize for trimming after welding.

The launching, as shown in an accompanying illustration, constituted a severe test of the vessel's ability to stand shock and sudden pressure, as in the side launch there was a vertical drop of about 3 feet 3 inches between the end of the ways and the surface of the water. Since the draft of the vessel at launching was 2 feet 9 inches this means that there was a total vertical drop of about 6 feet between the position of the vessel at the ends of the ways and the position at rest in the water. A very careful examination immediately after launching disclosed no leaks and no evidence whatever of any structural weakness.

### Cost Comparison of Welded and Riveted Ships

| | Item | Welded Ship | Riveted Ship |
|---|---|---|---|
| 1. | Mold loft work | $5,178.00 | $6,370.00 |
| 2. | Pickling and painting of structural steel | 1,227.87 | 1,436.00 |
| 3. | Fabrication and erection of steel hull | 28,474.15 | 42,890.00 |
| 4. | Welding (or riveting) of steel hull | 11,884.75 | 11,425.00 |
| 5. | Cleaning steel in way of welding | 509.73 | ..... |
| 6. | All other items except machinery | 61,606.29 | 61,606.29 |
| 7. | Sub-total (hull & fittings complete, without machinery) | 108,880.89 | 123,637.29 |
| 8. | Machinery items (except cost of units) | 18,860.51 | 18,860.51 |
| **9.** | **Grand Total (except cost of machinery units)** | **$127,741.40** | **$142,497.80** |


*Side launching of all welded auxiliary vessel for United States navy, a severe test of ability to stand shock and sudden pressure*

The obvious and outstanding advantage of welding over riveting in shipbuilding consists in the saving in weight of structural hull material.

**Less Weight and Cost**

The increased weights of the elements of the riveted hull, expressed as percentages of the weights of the corresponding elements of the welded hull, are itemized below in per cent:

| | |
|---|---|
| Longitudinal frames and beams..... | 43 |
| Bulkheads ..... | 22 |
| Decks ..... | 11 |
| Shell plating ..... | 3 |
| Transverses ..... | 0 |

When each of these percentages is multiplied by the fraction which the welded element is of the total weight of the welded hull, and the results added, the riveted hull is found to be 17 per cent heavier than the welded hull.

In the accompanying cost comparison, the cost figures for the welded vessel, are the actual costs to the government exclusive of the machinery units. These costs are divided into their elements, labor, overhead and material.

The difference between the two totals is $14,756.40 which is the *minimum* saving in first cost obtained by using welding instead of riveting on this vessel. Comparing this with the total cost of the riveted vessel (exclusive of machinery units), the saving is slightly over 10 per cent.

In addition to this first saving in cost there are other savings which cannot be so explicitly stated in terms of dollars. The riveted ship, being 17 per cent heavier, has a correspondingly reduced carrying capacity, and the welded ship therefore yields greater service for a smaller investment; fewer trips need be made to do the same work, thus reducing the cost of operation, and upkeep costs for wear and tear.

Throughout its life the riveted ship has 41,525 pounds more structural material to be pushed through the water.

## Manager at Washington

E. F. Sells has been appointed manager of the Washington, office of the Westinghouse Electric Mfg. Co. to fill the vacancy caused by the recent death of B. H. Hamilton.

Mr. Sells has been associated with the Westinghouse company since 1911, serving a period of years in the Denver and El Paso offices of that company. In 1919 he was transferred to the Washington office, specializing in ship propulsion machinery and marine equipment on which he has become a recognized authority.

He is a member of the American Society of Naval Engineers, Washington Congressional Country club, and Penn Athletic club of Philadelphia.

## S. S. Lurline Launching

(*Continued from Page* 9)

Each pendant was 50 feet long, and the drags connected thereby were spaced 15 feet apart; and the arrangement throughout was such that the drags came into action successively at 35 foot intervals. The arrangement was symmetrical, port and starboard, the drags operating in pairs.

The ground ways were of yellow pine in five 12 by 12-inch timbers, fastened together by 1¼-inch bolts and secured at the butts by three 1¼-inch bolts, cheek plates being fitted at the five forward butts. Forty-four grease irons 9/16-inch thick were used on each side.

The sliding ways were also of five timbers of yellow pine, about 12 by 12 inches in size, arranged in 35 foot lengths. Sections were connected by double straps of ⅞-inch plate with 2-inch bolts through the ways and cheek plates. Tie bolts 2 inches in diameter were used at the ends of the cradle, and 1½ inches in diameter at the center. Seven 8 by 8-inch yellow pine spreaders were fitted.

The fore poppet was of the usual Fore River type, consisting of four bands of 35-pound steel plate, supporting the ship through a mixture of coke and cement, with spruce packing near the keel. The bands were carried on packing of spruce planks, with crushing strips of 3-inch by 3-inch Oregon pine arranged to distribute the load evenly during pivoting. A vertical steel plate on the outside of the poppet connected all four bands and acted as a retainer for the packing and the crushing strips.

The after poppet consisted of vertical 12 by 12-inch timbers arranged in three sections, the after section having supports on each frame, and the two forward sections on each alternate frame. Saddles of 20-pound plate were fitted under the keel at every other vertical member, and cross bolts were also used under the keel to tie the two sides of the poppet together. The after poppet was weighted with steel rails to facilitate removal.

The keel was supported by sand blocks aft of the trigger pit and by alternate sand blocks and solid blocks forward.

**Hydraulic Triggers Used**

Hydraulic triggers were used to release the ship, arranged two on each side amidships. The releasing valve was arranged at the side of the slip, so that no one remained under the ship to release it. In all details, the releasing arrangement was similar to that used on the MARIPOSA and MONTEREY, and on several other ships at this plant. Emergency starting gear comprised one 200-ton and one 80-ton hydraulic jack on each side at the forward end of the cradle.

Paragon stearine, smoothed with hot irons, formed the base coat on the ways, and Keystone launching grease the slip coat. This combination has been used several times at the Fore River plant and has proven very satisfactory.

The following tabulation gives the outstanding particulars of the launching:

| | |
|---|---|
| Slope of keel, in. per ft. ..... | 17/32 |
| Slope of ways, under Q.G. of ship.... | 0.562 |
| Camber of ways, radius, feet ..... | 40,000 |
| Width of sliding ways, effective in. | 58¾ |
| Length of sliding ways, effective ft. | 497.5 |
| Bearing area of cradle, sq. ft. ..... | 4872 |
| Weight of ship, tons ..... | 11,990 |
| Weight of cradle, tons ..... | 375 |
| Total launching weight, tons ..... | 12,365 |
| Initial mean pressure tons per sq. ft. | 2.54 |
| Spread of ways on centers, feet ..... | 25 |
| Rise of tide, feet, inches ..... | 9 1½ |
| Depth of water over way-ends, ft. .... | 11.95 |
| Static drop ..... | None |
| Maximum way-end pres., tons per sq. ft. ..... | 3.8 |
| Fore poppet pressure at pivoting, ton | 2320 |
| Mean draft afloat, ft., in. ..... | 14 0¾ |
| Travel of ship beyond way-ends, abt. ft. | 142 |
| Total travel of ship, about, ft. ..... | 813 |

Here again, as in the launchings of the earlier ships of this group, the ship came to rest within a remarkably small distance of the point calculated in advance, again bearing testimony to the reliability of the chain drag method of checking.

## Deep Waterway Treaty

(*Continued from Page* 8)

plan will involve materially less flooding to Canadian farm lands and historic sites.

"The national or Quebec section of the St. Lawrence will be developed by the Dominion with Canadian labor and material. No control or supervision, direct or indirect, will be exercised by the United States over this national undertaking. Part of this work already has been started in the construction of the Beauharnois canal.

"In the upper lakes section from Lake Superior to the River St. Clair the United States government will complete the work on which it has been engaged for many years of deepening navigation channels and improving navigation facilities.

"As both Canada and the United States possess rights in international section of the St. Lawrence, the development of the river for the combined benefit of navigation and power can be undertaken only by agreement and co-operation between the two countries. It is necessary therefore to have a treaty defining the basis of co-operation."

Preservation of the levels of the Great Lakes is recognized as a necessity by both governments and is specifically covered in the treaty in the following words:

"That the diversion of water from the Great Lakes system through the Chicago drainage canal shall be reduced by Dec. 31, 1938, to the quantity permitted as of that date by the decree of the Supreme Court of the United States of April 21, 1930."

# Painting in Protecting Ships' Bottoms

## Against Corrosion and Fouling

By E. C. Powers*

NO DEFINITE length of time can be assigned as to the effective life of bottom coatings for the reason that a number of variables exert an influence. These variables are speed and form of underwater body of the ship, proportion of time spent in cruising, and time out of dock in relation to season of fouling propogation.

For instance, freight vessels due to hull contour are more susceptible to fouling than a destroyer. Frequent interruptions to a cruise by anchoring or tying up in harbors are large contributors to fouling, bearing in mind that fouling attachment in general comes to a vessel only when it is at rest. Finally, if a vessel which has been out of dock a long period is in water at a time when fouling propagation is at its height the paint film is probably deteriorated to an extent as to offer only slight resistance to the attachment of barnacles or other forms of fouling.

### Painting Every Nine Months

The navy docks its cruising vessels every 18 months at which time the bottoms are painted. Between overhauls, there is what is known as interim docking, usually midway. At this time, painting of the bottom is again carried out. A clean bottom is necessary for maintenance of a military aspect and the success or failure of a naval campaign might conceivably depend upon whether a vessel could maintain a certain required speed.

Clean bottoms on commercial ships are likewise of concern to operators since they figure so largely in speed and fuel consumption, and therefore are a factor in service and operating costs.

In order to insure satisfactory application of paint, the bureau of construction and repair has issued certain instructions for painting vessels belonging to the United States navy as follows:

"The entire outer surface of the hulls of all steel vessels below a line parallel to and approximately 10 feet above the waterline shall be given a priming coat of red lead during or immediately after assembly of the ship's structure. This red lead is composed of the following for 100 gallons:

| Ingredient | Pounds |
|---|---|
| Red lead (dry) | 166 |
| Zinc oxide (dry) | 83 |
| Venetian red (dry) | 437 |
| Magnesium silicate | 60 |
| Spar varnish | 196 |
| Raw linseed oil | 241 |
| Petroleum spirits | 58.5 |
| Paint drier | 87 |
| Aluminum stearate | 9.375 |
| Weight per gallon, pounds | 13 |
| Spreading rate per gal., sq. ft. | 600 |

"Two months before launching, the priming coat of red lead on the underbody shall be thoroughly inspected and cleaned. At that time care shall be taken to insure that all loose paint, grease, dirt, rust, scale, etc.; are removed and that the bare spots shall be touched up with the same formula red lead (as above). During the two months immediately prior to launching, no red lead shall be applied below the lower edge of the boot topping. Such touching up as may be necessary below the boot topping shall consist of a coat of anticorrosive and a coat of antifouling paint, formulas 14RB and 15RB respectively (given earlier in this article). Such touching up in way of the boot topping area shall be done with red lead, at least three days prior to launching.

"After launching, when docked during the construction period, except when docked for trials or for placing in service, the paint on the underwater body of the vessel shall be thoroughly inspected and any loose paint shall be removed. All bare spots below the lower edge of the boot topping shall be touched up with one coat of anticorrosive paint and one coat of antifouling paint, 14RB and 15RB respectively."

Ship bottom paints containing gum shellac dry in about 20 minutes but deteriorate rapidly on exposure to the air. When such are to be used, the time of starting application should be set so that the vessel will undock within 24 hours after the antifouling paint has been applied, and the antifouling paint should be applied within 24 hours after the anticorrosive paint has been applied. Ship bottom paints containing coal-tar and rosin do not deteriorate rapidly on exposure to the air and may be applied without reference to the time of undocking the vessel.

All wooden hulls shall be given two coats of copper paints of the following composition per 100 gallons:

| Ingredient | Pounds |
|---|---|
| Zinc oxide (dry) | 165 |
| Indian red (dry) | 165 |
| Cuprous oxide | 75 |
| Gum shellac | 162 |
| Alcohol | 500 |
| Pine oil | 90 |
| Weight per gallon, pounds | 11½ |
| Spreading rate per gal., sq. ft. | 300 |

In regard to vessels being dry docked for cleaning and repainting, the bureau instructs as follows:

"When the vessel is docked, the bottom shall be thoroughly cleaned and all blister paint scraped, but no paint of any kind which adheres firmly and affords protection is to be removed unless specific instructions have been received from the bureau of construction and repair to that effect. The underwater bottoms of steel vessels below the lower edge of the boot topping shall be touched up at bare spots with anticorrosive, formula 14RB and shall then be given two complete coats of anticorrosive, formula 14RB extending to the lower edge of the boot topping and one complete coat of antifouling, formula 15RB extending to the lower edge of the boot topping. The bare spots in way of the boot topping shall be touched up with red lead. . . The time of application of ship bottom paint before undocking shall be as specified." See paragraph above beginning "Ship bottom paints containing," etc.

The purpose of the antifouling paint is as a medium for holding the toxics after application and slowly releasing them so as to obtain maximum antifouling results. After considerable investigation, covering a wide range of materials that afforded some promise of toxicity toward fouling growths, the navy observed that a combination of cuprous oxide and mercuric oxide gave the most reliable results. The coal-tar rosin antifouling paint formula 15RB contains this combination.

### Degree of Toxic Effect

It is interesting to note than the antifouling paint film must not be so impervious to water as to render the toxic materials unavailable. In this connection, experiments with one type of ester gum paint indicated that the toxic materials were, so to speak, locked up in the film. The rosin coal-tar combination appears to

*This is the final installment of an article in two parts. The first part appeared in the July issue of MARINE REVIEW.

be a satisfactory matrix in this respect. It would appear that the toxics must be available in such a manner as to slowly leach out of the film, create a minute zone of contaminated water adjacent to the film, and thus discourage the attachment of fouling growths.

The material cost of the coal-tar rosin antifouling paint is approximately $2.00 per gallon. The determination on the part of the bureau of construction and repair that a mixture of cuprous oxide and mercuric oxide is more effective than either material alone, lead recently to a change in the manufacturing formula for antifouling paint, formula 15A which is now as follows for 100 gallons:

| Ingredient | Quantity |
|---|---|
| Alcohol, gals. | 70 |
| Gum shellac, lbs. | 82 |
| Yacca gum, lbs. | 95 |
| Pine oil, gals. | 12½ |
| Zinc oxide (dry), lbs. | 165 |
| Indian red (dry), lbs. | 165 |
| Mercuric oxide, lbs. | 40 |
| Cuprous oxide, lbs. | 120 |
| Weight per gallon, lbs. | 10½ |
| Spreading rate per gal., sq. ft. | 330 |

At the present time there are two main classes of antifouling paints in use. These are: (a) Varnish paint using a gum of some kind as a binder and depending on the evaporation of a solvent for drying and described above; (b) Hot plastic paint of a waxy consistency containing no volatile thinner, applied in a melted condition and hardening on cooling. As a result of considerable experiment, development and testing, the chemical warfare service of the war department found that paints of the hot plastic type will prevent fouling and corrosion for longer periods although they are more expensive to manufacture and apply than varnish paints.

### Plastic Anti-Fouling Paint

Development of the hot plastic type of antifouling paint was undertaken by the chemical warfare service in 1922. A successful commercial product was analyzed and a paint known as B-2 was developed. This paint was of the following composition:

| Material | Weight % |
|---|---|
| Rosin | 30 |
| Pine tar | 11 |
| Lead rosinate precipitaed | 9.1 |
| Lead palmitate | 18 |
| Mercuric rosinate | 12 |
| As 2 O 3 | 2.7 |
| Paris green | 13.7 |
| Turpentine | 3.5 |

The process of manufacture of this hot plastic paint was as follows:

The rosin and lead soaps were melted and the mercury soap added. This in turn was melted and thoroughly mixed and the arsenic and Paris green added and stirred in. The solution was thinned with turpentine when partially cool. (Later on, in the manufacture of this paint, pine oil was substituted for the turpentine on account of the higher boiling point of the pine oil which would cut evaporation losses during the heating). This paint was then subjected to fouling test, the paint being applied to steel plates, submerged in salt water and inspected at regular intervals. After being submerged for six months, the plates were inspected and showed practically no fouling.

In an effort to establish the comparative value of various toxic ingredients in this paint, another series of paints was made in which the toxics were used singly and in combinations with inert materials substituted for the omitted constituents. As a result of tests of this paint, it was found that arsenic trioxide had no toxic value; that Paris green was effective as a toxic, that mercuric rosinate had some value as a toxic although not as much as Paris green.

Following the tests of these paints applied to plates and submerged for periods, the paint was actually applied on naval vessels. Accordingly, a quantity of this B-2 antifouling paint and an anticorrosive paint was prepared and applied to the U. S. S. KING. The vessel was undocked in May and docked in April for examination. It was discovered that although this paint had shown up well on plate tests, it did not stand up in actual service. Although not excessive, there was considerable fouling and the paint was missing in a few spots on the flat of the bottom of the vessel.

### More Experiments Undertaken

As a result of these findings, further experiments were undertaken. Based on the formula of the B-2 paint, a number of paints were made and tested. One of these, referred to as B-3, was selected for service tests on the bottoms of vessels. The composition of this paint is given in the following table:

| Material | Parts |
|---|---|
| Rosin WW | 41.7 |
| Basic copper acetate | 9.75 |
| Raw linseed oil | 10.5 |
| Stearic acid (double pressed) | 10.5 |
| Litharge | 8 |
| Arsenic trioxide, amorphous | 8 |
| Acetic acid (50 per cent) | 2 |
| Mercuric acetate (60 per cent h.g.) | 5 |

In making this paint, the rosin is melted in a small amount of water after which the copper acetate is added until copper rosinate is formed. The other materials tabulated are then added in the proportion given in the table. The material is then heated until green and of uniform consistency after which it is thinned with five parts of pine oil.

As a result of a study of all data obtained on the hot plastic type of paint, the chemical warfare service drew the following tentative conclusions: (1) That the principal toxics are mercury and copper with lead and arsenic as secondary toxics, probably acting as boosters to the other two; (2) That the physical condition of the film is the principal factor influencing the efficiency of the paint so long as the toxics are present in sufficient quantity; (3) That an equilibrium is reached between the mercury and lead on the one hand, and the fatty acids (including rosin) on the other. This equilibrium is largely independent of the combinations in which the constituents are added, although the time required will vary between large limits depending on the original combinations and the amount of cooking given in making up the paint; (4) That, given the proper amount of copper, arsenic, and acetate radical, these constituents combine to form copper acetoarsenite, since this compound may be recovered as such from the finished paint; (5) That the equilibrium point, as well as the amount of copperarsenite formed, will be determined by the relative amounts of the constituents present, excesses remaining as free rosin, free acid, $As^2$ $O^3$, etc.; (6) That the paint may be made much more cheaply by combining the raw materials in the kettle than by making the various ingredients separately.

### Quality and Cost Considered

It is worthwhile to point out that in the case of vessels which are drydocked periodically for purposes other than cleaning and repainting, a more inexpensive paint might well be substituted for the more expensive types. However, it remains for the operator to determine for himself just which method of procedure will reduce the upkeep cost of his vessel to the greatest extent.

All items of upkeep expense which are directly attributable to fouling should be itemized. To the sum of these various items should be added the cost of drydocking, cleaning and repainting. Also the expense resulting from reduced speed of vessels, greater fuel consumption, wear and tear on machinery, and the reduced earnings due to necessary layup for this purpose out of each year. Compared with the sum of these items, the cost of the expensive but also more efficient antifouling paint with its longer period of effectiveness, should be considered.

By some such method as this, the operator should determine which will be the least costly in the long run—the more efficient paint with its longer protective life or the less expensive covering which necessitates semiannual scraping and repainting of bottoms.

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Hardie-Tynes Mfg. Co., Birmingham, has been awarded contract for pump shell and liners for the dredge BLACKWATER for the United States engineer at Montgomery, Ala., here at $3429 and crankshaft section for the engineer at Savannah at $4595.

# World Shipbuilding is Lower Than for Fifty Years

WORLD production of merchant vessels is at a lower level than during the past fifty years, according to a statement recently issued by Lloyd's Register of Shipping, covering returns from all maritime countries, excepting Russia for the quarter ended June 30, last.

In comparison with the previous quarter, a reduction of nearly 200,000 gross tons is shown in the volume of unfinished tonnage in the shipyards of the world. A year ago 715,000 gross tons more were being built than at present.

Not one country is shown to have made gains during the past quarter in the work in hand. During this period the tonnage in the hands of the shipbuilders of Great Britain and Ireland decreased nearly 100,000 gross tons; while a decline of over 40,000 tons was reported for the United States, and about 30,000 tons for France.

### Italy Takes Second Place

During the past quarter, Italy ousted the United States from second place, and now is led by Great Britain and Ireland by only 100,000 gross tons. A year ago the United States was building about 250,000 less tons than Great Britain and Ireland; but the gap has now been lessened to about 120,000 tons.

How the output of the various groups of shipbuilding countries has compared during the past two quarters is shown in the following table, the figures representing the gross tonnage of merchant vessels in the hands of the builders:

| | June 30, '32 | Mar. 31, '32 |
|---|---|---|
| Grt. Britain & Ireland | 280,692 | 372,973 |
| United States | 162,203 | 206,703 |
| Other countries | 666,878 | 718,287 |
| World total | 1,109,773 | 1,297,963 |

The comparison between the volume of new vessels started and tonnage launched during the past two quarters is shown in the following table. The figures are in gross tons:

**New Work**

| | June 30, '32 | Mar. 31, '32 |
|---|---|---|
| Grt. Britain & Ireland | 27,356 | 24,793 |
| Other countries | 42,540 | 53,745 |
| World total | 69,896 | 78,538 |

**Launchings**

| | June 30, '32 | Mar. 31, '32 |
|---|---|---|
| Grt. Britain & Ireland | 68,669 | 34,662 |
| Other countries | 124,071 | 89,490 |
| World total | 192,740 | 124,152 |

Thirty thousand less tons of tankers are now being built throughout the world than at the end of the March quarter. The figures cover steam and motor tankers of 1000 gross tons each and upwards, and show that the trend towards motorized tankers continues. Of the total construction of tankers, 258,269 gross tons, or about 95 per cent of the whole, is of this type of propulsion. The comparison for the two quarters is given in the following gross tonnage table of tanker building:

| | June 30, '32 | Mar. 31, '32 |
|---|---|---|
| Grt. Britain & Ireland | 47,216 | 59,182 |
| Sweden | 74,421 | 83,521 |
| Germany | 72,400 | 72,400 |
| Other countries | 78,832 | 87,069 |
| World total | 272,869 | 302,172 |

Motorships do not hold the same position of dominance in relation to other classes of merchant vessels. During the past quarter, however, the decline in the tonnage of motor vessels under way was only about 65,000 gross tons, as against about 125,000 tons of vessels of other types combined. As a result, about 150,000 tons less of motor vessels are now being built than of all other kinds taken together. The present total of world construction is represented by 43 per cent of motorized tonnage and 57 per cent of other types, a slight gain for motor vessels over the previous quarter. The past two quarters are compared in the following gross tonnage table:

| | June 30, '32 | Mar. 31, '32 |
|---|---|---|
| Motor vessels | 480,380 | 545,338 |
| Other types | 629,393 | 752,625 |
| World total | 1,109,773 | 1,297,963 |

There was a marked falling off in motorship construction in Great Britain and Ireland during the past quarter. As a result of this, only 12 per cent of the shipbuilding total of those countries is now being devoted to motorized tonnage, as against 22 per cent in the March quarter.

For all other countries grouped, 54 per cent of their total shipbuilding is represented by motor vessels, as contrasted with almost exactly fifty per cent in the March quarter.

The contrast between these groups for the quarter just ended is shown in gross tons in the following table:

| | Great Britain & Ireland | Other Countries |
|---|---|---|
| Motor vessels | 34,718 | 445,662 |
| Other types | 245,974 | 383,419 |
| Total | 280,692 | 829,081 |

Germany continues to lead in the volume of motorship construction under way. Very little motorized tonnage is being built in the United States. Figures for the past two quarters are given as follows:

| | June 30, '32 | Mar. 31, '32 |
|---|---|---|
| Germany | 101,300 | 101,680 |
| Sweden | 83,371 | 92,471 |
| Italy | 79,050 | 79,050 |
| Holland | 48,139 | 50,480 |
| Grt. Britain & Ireland | 34,718 | 82,597 |
| United States | 803 | 503 |

A decrease was shown during the last quarter for all types of marine engines being built or installed.

For oil engines the total indicated horsepower was 409,455 for all countries at the end of June, as against 436,160 at the end of March. For Great Britain and Ireland there was a decline from 57,380 in March to 22,315 in June. Germany's total receded from 94,740 to 90,655; Italy's from 72,400 to 69,800; Sweden's from 68,480 to 65,415; and that of the United States advanced from 5050 to 5710.

For steam reciprocating engines, the total of 143,924 at the end of March fell to 115,009. For Great Britain and Ireland, the chief users of this type of propulsion, the total declined from 101,644 to 74,024.

Steam turbines showed the largest decrease, their aggregate of 910,360 shaft horsepower declining to 826,150 during the June quarter. The decline for the United States was from 244,400 to 182,200; for France, from 220,000 to 190,000. Italy's total remains unchanged at 237,000, and that of Great Britain and Ireland advanced from 207,510 to 216,950.

Except for Italy superseding the United States in second position, placing the latter country third in rank, there was no change in the relative output ranking of the various countries during the quarter, as shown in the following tonnage table:

| | June 30, '32 | Mar. 31, '32 |
|---|---|---|
| Grt. Britain & Ireland | 280,692 | 372,973 |
| Italy | 180,565 | 181,821 |
| United States | 162,203 | 206,703 |
| France | 128,128 | 156,760 |
| Germany | 103,500 | 103,885 |
| Sweden | 89,201 | 98,301 |
| Holland | 48,574 | 50,915 |
| Japan | 43,669 | 45,770 |
| Spain | 33,272 | 33,272 |
| Denmark | 20,373 | 24,265 |

Germany and Spain are the only countries retaining as great a tonnage as they had at the end of March.

Nine large merchant vessels, each of 20,000 gross tons or more, are now being built throughout the world, as compared with eleven at the end of March. Italy still has four, as at the end of March, and the United States still has two. Two, however, are now under construction in Great Britain and Ireland, as against three previously; and one as against two previously in France.

## Manhattan's Commander

Capt. George Fried has relinquished command to the United States liner PRESIDENT ROOSEVELT to become captain of the line's new vessel MANHATTAN, to sail from New York on her maiden voyage Aug. 10. He was released from the command of the PRESIDENT ROOSEVELT on July 15 and proceeded to Camden N. J., to join his new ship where she was then being made ready for her sea trials.

Captain Fried will be succeeded in the PRESIDENT ROOSEVELT by Capt. John Jensen, who has been in command of the CITY OF HAMBURG, of the Baltimore Mail line for which the Roosevelt Steamship Co. also acts as general agent.

# European Shipping Is Fighting Hard

## to Reduce Cost and Increase Patronage

By Frank C. Bowen

REORGANIZATION of Lord Kylsaut's vast shipping enterprise is bound to be an involved business, and nobody need be surprised at the long time that has elapsed between the announcement that Sir Frederick Lewis of the Furness Withy line—now Lord Essendon—was going to take over the South American business and Richard Holt of the Blue Funnel line, the West African, and an actual move being made. To begin with there was all sorts of legal bother, and the fact that both the British and the North Irish parliaments had to approve the scheme made for more delay. These difficulties have now been bridged and a move is being made immediately, but it will still take a long time before any great changes are shown.

These two big operating companies will only cover two branches of the group's activities, and there will be a number of independent concerns allowed to look after their own business at last, particularly to South Africa and the Far East. They all have excellent reputations in their respective areas and ought to go ahead again.

With regard to the rival Inchcape group, the death of the first Lord Inchcape was, of course, bound to have a big influence, but he had gathered brilliant men around him for a number of years, men who have spent their lives in the various branches of the group. But the new Lord Inchcape, better known as Lord Glenapp, has decided not to take a principal part in the affairs of the P & O company, and while retaining a seat on the board is devoting most of his attention to his late father's many other interests. All of these are more or less closely connected with shipping and with the ships of the group.

### Much Tonnage Laid Up

Figures recently prepared of shipping laid up in the home ports of various countries make Britain's position look more comfortable than most shipping men have been considering it for a long time past. Of the 70,000,000 odd tons owned in the world over 13,000,000 are laid up or about 19 per cent. Britain has 14 per cent idle against 31 per cent in Germany—this figure is believed to have gone up to over 33 since the return was published—28 in France, 24 in the United States, 21 in Norway, 20 in Denmark, 19 in Holland and 18 in Italy. The only countries in a more fortunate position are Sweden and Spain with 11 per cent each and Japan with 8 per cent.

In considering these figures it must be remembered that the recent heavy demand for scrap steel in Japan caused a large number of ships to be broken up, and that the figures for Norway are a little misleading, owing to the large number of tankers which were built to time charter for a number of years and which are laid up out of the country.

Also, Britain's position does not appear quite so comforting when one considers that its merchant fleet represents 28.9 per cent of the world's shipping—it was 39.2 per cent when war broke out—so that the 2,750,000 tons of idle British ships are more than the German and French totals put together. Unemployment among seamen is therefore also far greater and the shipping industry is obviously of more importance to Britain than it is to a Continental power. If only a means could be found to scrap the surplus economically the position would be more encouraging.

### Accepting Low Freight Rates

The question is still acute as to whether it is better for a tramp owner to accept terms which lose money on the voyage or to lay his ships up until things improve. The Baltic and International conference has issued a circular to its members which very strongly advocates laying up, but there are any number of experienced shipowners who do not agree with this and who consider that it is better to keep the ships going if it can be done without incurring too great a loss. At the present time British tramp owners are finding themselves so severely underbid by certain flags, particularly the Spanish, Italian and Greek, that all too often business can only be obtained at a heavy loss.

Conspicuous among the ships laid up are the tankers and the number includes some of the finest ships of their type afloat. When the owners built their ships on a ten-year time charter to one of the big oil concerns their position is satisfactory enough, for the time being at least, but there are many speculative Scandinavian owners who were not so fortunate and they find themselves in a serious position. The Russian authorities are taking advantage of this position and have already obtained one or two tankers of the most up-to-date type at a very reasonable price; if they were willing to pay cash they could have a magnificent selection.

With things so bad in the whole European shipping world it is not surprising that the subsidy system shows a general tendency to increase and political pressure is being brought on the governments of all countries for the purpose of increasing the rates or introducing new benefits. As one example, the Italian subsidies have been increased by over 30,000,000 lire for 1932-33 until now they are well over 250,000,000 lire per annum. The question is where this policy is going to stop and where the money is coming from.

Generally speaking, British shipowners are against any subsidy system except as an agreed payment for the carriage of mails where the national interest demands a service which is far above the economical level. Edmund Watts, head of Messrs. Watts Watts & Co., tramp shipowners, who startled his shareholders by appalling figures of the way British tramps had been beaten in the various markets recently, is urging a campaign for shipping subsidies, but the general opinion of the industry is strongly against him. The experienced man generally maintains that state assistance is bound to bring in state interference which would eventually cost the shipowner much more than he receives, while it will also tend to keep in existence the boom companies which grew up like mushrooms during and immediately after the war and which have been the curse of the shipping industry ever since.

### Government Aid to Shipping

Certainly state help in France does not seem to have cut down her laying up figures, and although the German government does not go to nearly the same length as the French, yet the benevolent assistance given to the various companies has not prevented Germany heading the list of laid-up shipping. A general reduction of capital has proved to be necessary in most of the German lines—the Hamburg-

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This is a quarterly review of the shipping situation abroad, appearing regularly in MARINE REVIEW. The two previous articles for this year were published in the February and May issues and the fourth article will appear in the November issue.

## Trend of Trade and Shipping in British Isles

| | March | April | May | Five months ended May 31, 1932 | 1931 |
|---|---|---|---|---|---|
| Total entrances of cargo ships into British ports: | | | | | |
| Number of vessels | 3,476 | 3,756 | 4,161 | 19,459 | 20,895 |
| Tons | 4,128,816 | 4,345,589 | 4,768,890 | 22,115,391 | 22,988,276 |
| Tonnage from Atlantic coast of North America | 561,732 (13.6%) | 730,055 (16.9%) | 880,093 (18.5%) | 3,335,855 (15%) | 3,840,526 (16.8%) |
| Total clearances from British ports: | | | | | |
| Number of vessels | 4,341 | 4,282 | 4,161 | 21,048 | 22,202 |
| Tons | 4,275,451 | 4,455,976 | 4,257,038 | 21,633,375 | 23,277,469 |
| Tonnage going to Atlantic coast of N. America | 480,355 (11.3%) | 648 252 (14.5%) | 740,037 (17.4%) | 2.788,578 (12.9%) | 3,326.372 (14.3%) |
| Total value of goods: | | | | | |
| Exported | £36,620,376 | £39,423,098 | £34,595,524 | £182,465,016 | £199,388,260 |
| Imported | £61,119,414 | £53,487,187 | £55,735,344 | £302,530,750 | £349,278,419 |
| Exports of coal: | | | | | |
| Tons | 2.925,779 | 3,621,853 | 3,299,134 | 16,392,798 | 17,534,573 |
| Value | £2,318,280 | £2.912.543 | £2.712,064 | £13,124.248 | £14,101,457 |
| Tonnage shipped for use of steamers | 1,289,359 | 1,185,037 | 1,078,185 | 6,033,241 | 5,854,540 |

American, North German Lloyd, Neptun and the companies that have such a wonderful reputation on the African trade, to mention only a few. After the war there were big increases in the capital of most of these companies. Practically all this extra capital must now be regarded as lost and in a good deal more beside. There is scarcely a German company of any importance at the moment which is not forced to write down.

It remains to be seen whether some of the big British companies will not be forced to write down also in the near future, but they naturally want to avoid doing so if they can and in the meantime they cannot be accused of any lack of enterprise in searching for new business or new ideas that will help square the accounts. Perhaps it is the smaller coasting companies which are hit hardest at the moment, but their finances are not on a scale to attract general attention. They complain most bitterly of the way Continental coasters, particularly the Dutch, are cutting into the purely British business and the campaign for cabotage reservation is certainly gaining in strength.

In the meantime the Soviet government is steadily building up its merchant service in opposition to privately-owned tonnage in Europe. According to the latest official figures the Russian merchant service now totals 2908 ships of 841,000 tons deadweight capacity. These figures need constant revision as deliveries are now coming forward well after long delays. The state yards are turning out ships not only for overseas services but even more for the river and coastal runs which do not demand a large individual tonnage but which aggregate big figures. The Russians certainly will not be content until they have a state-owned merchant service big enough to cover all their trade requirements. In fairness it has to be admitted that most of their new ships are good vessels.

### Little Demand for Shipbuilding

On the shipbuilding side the results are no more satisfactory than they are on the shipping, although many of the French yards have published remarkably satisfactory reports and have distributed good dividends. In Germany the shipbuilding firms are reducing their capital like the shipowners and in Britain the Cooperative National Shipbuilders Ltd. is steadily buying yards and closing them down. No less than 13 yards have been scrapped since the movement started in 1930, and there are plenty more to go.

One of the latest yards to be closed down is Earle's famous establishment at Hull, which for nearly 80 years has been one of the most prominent shipbuilding firms on the North East coast. The firm started in 1843 when two brothers, Charles and William Earle, began engineering in Hull. In 1853 they started shipbuilding as well, their first launch being a little Dutch steamer of 258 tons for the North sea trade. They made a great reputation for themselves in reliable work, although they never engaged in any large or picturesque ships. For a spell they did a lot of naval work but it is on merchantmen that their great reputation rests and many are sorry to see such a historic establishment go out of existence.

There are certainly not very many prospects of orders for new ships with so much surplus British tonnage, but many builders are wondering whether there is not a good chance of modernizing existing tonnage and putting it nearer to a level with the newest ships. The Dutch have given several cargo liners the Maier hull with excellent results and the question has been raised in British circles. But few of the owners can afford to make the outlay and the builders cannot afford to grant too long terms. Quite a number of ships have recently been fitted with superheaters but there is a definite check to the movement started a year or so ago to fit exhaust turbines into reciprocating engined ships. Owners are frankly nervous of the overhead costs and British yards have not yet followed the German example of offering to make the installation in return for the fuel actually saved on service, leaving the owners the benefit of better speed and smaller bunkers.

On account of the level of the pound the tendency to have British repairs done in Continental yards is diminishing, but the competition is still dangerous as was shown when the NURTURETON in two halves went to a Rotterdam yard to be joined together, with a large margin over the lowest British bid.

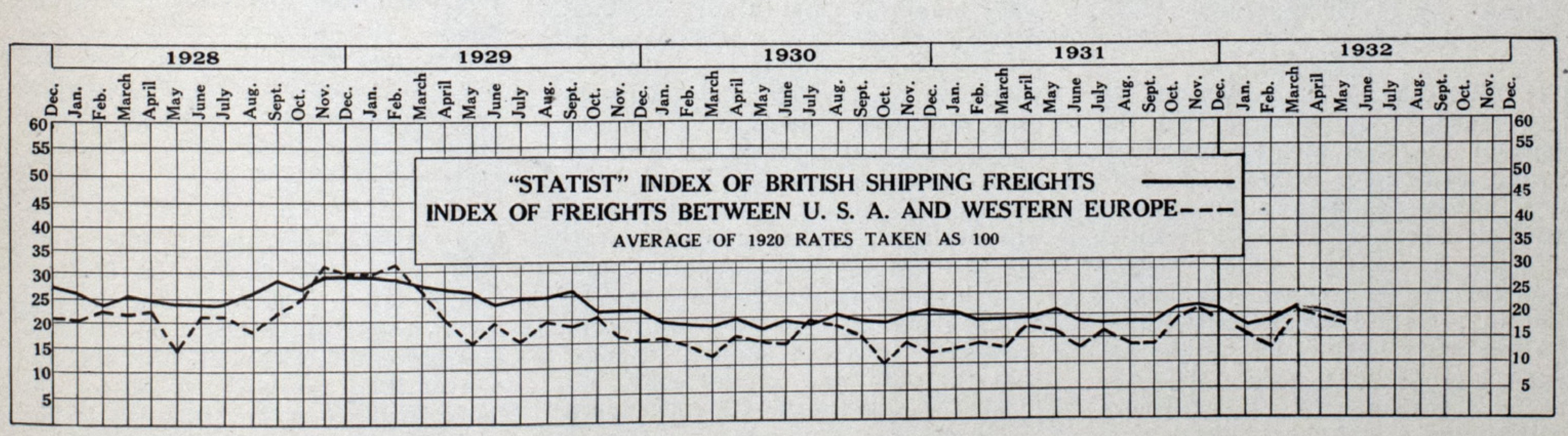


*Diagram Showing Fluctuation of Ocean Freight Rates for Four Years and Five Months*

# Late Decisions in Maritime Law

## Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
*Attorney at Law*

WHERE a vessel is lost through collision, reconstruction cost less depreciation for age is not an absolute measure of the vessel's value, but only one of the relevant facts, all of which must be considered in arriving at a fair judgment of value; nevertheless, under such conditions as were shown to exist in the case of HISKO, 54 F. (2d) 540, reconstruction costs less depreciation, it was held, might be deemed a reliable indication of the minimum value. The libelant was held entitled to be restored to the position it would have been in had no tort been committed; that is, to get the value of a British built ALMIRANTE flying an American flag and going under requisition when she reached port. If she was less valuable because British built, then reconstruction costs should be estimated on British rather than on American prices.

* * *

DUTY of owner of vessel regarding her seaworthiness does not involve a continuing warranty but merely requires seaworthiness when the charter begins. When a barge, which has been delivered under a harbor demise charter, to the charterer, is returned at the end of the charter in a damaged condition, there arises, under the familiar law of bailments, a presumption that such damage was due to the charterer's negligence, and the charterer, in order to overcome this presumption and escape liabiltiy, must show that the damage was not due to his own negligence, or to the negligence of any one whom he has employed to move or otherwise handle the barge of which he is bailee.—RENO, 54 F. (2d) 682.

* * *

IN THE case of H. J. HINMAN, 54 F. (2d) 12, it appeared that the contract involved dealt only with towing, calling for delivery of scows at a towing company's stakeboats. Said the court: "There is nothing in such a contract which fastens upon the towing company an obligation to protect from vicissitudes of the weather all scows left at the appointed rendezvous, before the towing had begun. * * a concern maintaining a stakeboat, like a concern maintaining a wharf, is under a duty to use reasonable care in furnishing to scows which tie up there at its invitation a berth free from hidden obstructions. But to go further, and to say that it must also take measures to move a scow which is in danger of damage from storms, seems to be an extension of its duties for which there is no warrant. Its obligation in this respect is no greater than that of a concern in charge of a wharf."

* * *

THE limited liability act provides that no owner of a vessel shall be liable to make good any loss or damage to cargo caused by fire, "unless such fire is caused by the design or neglect of said owner." The phrase, "neglect of said owner," said the court in the case of GALILEO, 54 F. (2d) 913, means negligence of the owner personally, or, in the case of a corporate owner, negligence of its managing officers or agents, and it is perfectly clear under the authorities that negligence of the ship's officers in causing a fire is not to be imputed to the owner so as to deprive him of the statutory immunity; in all cases where exoneration from liability has been denied, there has been proof that the fire was due to the negligence of the owner himself or of some representative of the owner other than the ship's officers and crew.

* * *

THE merchant marine act gives to a seaman, in addition to his rights under the maritime law, new rights and remedies, and also gives his personal representative a cause of action for death. These rights and remedies are those possessed by railway employes and their personal representatives under the laws of the United States. As the action reported in 54 F. (2d) 987 (Kunschman v. United States), was brought by the personal representative to recover damages for the death of a seaman, the rights of the parties, it was declared, depend upon the statute and not upon the general maritime law, under which there can be no recovery on a death claim; consequently, it is not enough to show that the ship was unseaworthy, but it must appear that death was caused by negligence chargeable in law to the employer.

WHILE an owner who lets the construction of an engine to an independent contractor may not be responsible under the doctrine of respondeat superior for the negligence of such contractor or his servants, where the owner supervises the work and knows, or should know because of such supervision, that the engine is inherently dangerous, the owner is not freed of responsibility for its condition. The primary duty was on the ship owner to provide a safe engine in the fulfillment of its obligation to the deceased to furnish safe appliances with which to work. When it undertakes to fulfill this duty by means of an independent contractor but nevertheless keeps such control over the work that it has, or is charged with, the same knowledge of defects it would have had if it had done the work itself and one of its employes who is furnished the appliances with which to work is injured because of a defect due to negligent construction, the proximate cause of the injury is not the negligence of the independent contractor, but that of the ship owner. Under such circumstances the owner cannot escape responsibility for the negligence because in law it is its own.—Kunschman v. United States, 54 F. (2d) 987.

* * *

THE burden is on a charter to return the boat at the end of the term in as good condition as when delivered, less ordinary wear and tear.—A. F. CO. No. 4, 54 F. (2d) 145.

* * *

A VESSEL licensed as a pleasure yacht, but engaged in carrying liquor, violated the terms of her license and subject herself and her cargo to forfeiture; lack of knowledge by owner is no defense.—United States v. American Motor Boat K-1231, 54 F. (2d) 502.

* * *

WHEN a tug finds that she cannot deliver her tow at its destination, it is her duty to return the tow to its owner or to tie it up at some safe place and protect it until she can deliver it at the point called for; to leave boats in an unsafe berth is not a performance of the contract of towage.—B. B. No. 21, 54 F. (2d) 532.

# Marine Business Statistics Condensed

## Record of Traffic at Principal American Ports for Past Year

### New York

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 267 | 1,579,970 | 277 | 1,650,915 |
| May | 277 | 1,484,116 | 259 | 1,392,451 |
| April | 270 | 1,506,696 | 277 | 1,515,147 |
| March | 332 | 1,982,670 | 375 | 2,070,546 |
| February, | 312 | 1 875.981 | 322 | 1,776,394 |
| **January** | **297** | **1,821,335** | **305** | **1,719,978** |
| December | 314 | 1,692,258 | 343 | 1,744,190 |
| November | 304 | 1,564,284 | 308 | 1,542,849 |
| October | 309 | 1,626,094 | 322 | 1,708,560 |
| September, 1931 | 523 | 2,724,761 | 522 | 2,641,711 |

### Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 55 | 157,399 | 36 | 102,354 |
| May | 66 | 205,184 | 46 | 142,889 |
| April | 55 | 165,646 | 51 | 159,427 |
| March | 57 | 186,479 | 45 | 151,190 |
| February | 49 | 150,899 | 34 | 98,667 |
| **January** | **51** | **168,266** | **36** | **114,982** |
| December | 58 | 180,172 | 42 | 132,734 |
| November | 52 | 148,335 | 37 | 111,969 |
| October | 69 | 192,159 | 57 | 160,609 |
| September, 1931 | 66 | 172,313 | 54 | 155,113 |

### Boston

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 116 | 342,057 | 95 | 322,558 |
| May | 125 | 294,093 | 97 | 257,608 |
| April | 103 | 308,951 | 72 | 215,237 |
| March | 99 | 319,863 | 65 | 217,992 |
| February | 107 | 315,036 | 63 | 213,166 |
| **January** | **94** | **286,508** | **61** | **208,491** |
| December | 102 | 313,977 | 65 | 240,908 |
| November | 75 | 241,142 | 52 | 166,786 |
| October | 98 | 325,261 | 66 | 241,072 |
| September, 1931 | 109 | 339,482 | 78 | 263,783 |

### Portland, Me.

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 10 | 25,895 | 11 | 26,519 |
| May | 14 | 26,484 | 14 | 29,669 |
| April | 10 | 22,911 | 10 | 24,483 |
| March | 14 | 41,083 | 13 | 35,993 |
| February | 20 | 53,793 | 20 | 56,558 |
| **January** | **13** | **28,179** | **14** | **28,955** |
| December | 18 | 38,860 | 18 | 37,319 |
| November | 17 | 40,991 | 19 | 47,514 |
| October | 17 | 39,060 | 16 | 34,195 |
| September, 1931 | 27 | 48,534 | 26 | 52,035 |

### Providence

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | ..... | ..... | ..... | ..... |
| May | 7 | 24,204 | .... | ..... |
| April | 4 | 17,438 | 3 | 13,515 |
| March | 8 | 35,293 | 5 | 24,289 |
| February | 5 | 19,442 | 4 | 18,533 |
| **January** | **8** | **41,147** | **4** | **21,654** |
| December | 11 | 41,268 | 4 | 17,037 |
| November | 9 | 35,826 | 5 | 18,040 |
| October | 6 | 23,833 | 6 | 23,836 |
| September, 1931 | 6 | 20,330 | 3 | 11,160 |

### Portland, Oreg.

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 20 | 80,272 | 25 | 98,356 |
| May | 20 | 82,750 | 25 | 99,862 |
| April | 23 | 83,171 | 28 | 104,796 |
| March | 26 | 103,924 | 36 | 142,050 |
| February | 32 | 127,810 | 36 | 149,417 |
| **January** | **27** | **112,542** | **42** | **168,762** |
| December | 29 | 114,184 | 40 | 154,060 |
| November | 26 | 103,835 | 47 | 182,585 |
| October | 36 | 144,875 | 54 | 207,518 |
| September, 1931 | 32 | 126,256 | 49 | 199,803 |

### Baltimore

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 95 | 299,502 | 97 | 294,264 |
| May | 95 | 289,042 | 102 | 317,751 |
| April | 108 | 346,276 | 114 | 377,317 |
| March | 96 | 288,052 | 105 | 319,511 |
| February | 105 | 337,487 | 98 | 323,603 |
| **January** | **95** | **301,958** | **102** | **328,876** |
| December | 102 | 330,709 | 106 | 354,320 |
| November | 99 | 304,138 | 98 | 314,109 |
| October | 116 | 388,308 | 111 | 385,136 |
| September, 1931 | 111 | 350,556 | 117 | 362,970 |

### Norfolk and Newport News

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 18 | 51,803 | 48 | 114,222 |
| May | 24 | 52,049 | 43 | 112,672 |
| April | 22 | 59,932 | 33 | 77,515 |
| March | 33 | 79,948 | 42 | 99,939 |
| February | 22 | 68,136 | 48 | 121,647 |
| January | 17 | 53,536 | 38 | 104,392 |
| December | 30 | 95,762 | 38 | 110,614 |
| November | 23 | 77,075 | 47 | 113,416 |
| October | 25 | 76,385 | 54 | 146,995 |
| September, 1931 | 24 | 72,333 | 47 | 104,255 |

### Jacksonville

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 7 | 12,746 | 10 | 20,277 |
| May | 12 | 33,157 | 8 | 20,489 |
| April | 9 | 17 886 | 9 | 21,812 |
| March | 8 | 15,560 | 13 | 26,457 |
| February | 8 | 18,785 | 10 | 21,812 |
| January | 8 | 26,601 | 12 | 27,759 |
| December | 12 | 25,453 | 10 | 21,501 |
| November | 6 | 14,295 | 8 | 22,180 |
| October | 10 | 25,659 | 9 | 17,710 |
| September, 1931 | 6 | 12,463 | 8 | 18,888 |

### Key West

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 37 | 61,115 | 39 | 76,274 |
| May | 56 | 76,236 | 55 | 76,070 |
| April | 55 | 77,443 | 50 | 80,778 |
| March | 41 | 61,078 | 39 | 59,069 |
| February | 39 | 59,334 | 39 | 66,392 |
| January | 43 | 67,913 | 42 | 71,873 |
| December | 39 | 68,392 | 40 | 73,365 |
| November | 40 | 53,752 | 42 | 53,497 |
| October | 37 | 57,588 | 37 | 59,408 |
| September, 1931 | 36 | 54,012 | 35 | 55,610 |

### Mobile

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 91 | 207,178 | 93 | 201,443 |
| May | 102 | 212,215 | 97 | 198,871 |
| April | 102 | 192,617 | 104 | 202,965 |
| March | 97 | 204,645 | 98 | 211,921 |
| February | 101 | 235,846 | 96 | 219,215 |
| January | 110 | 253,792 | 112 | 242,378 |
| December | 98 | 226,656 | 85 | 214,395 |
| November | 100 | 214,204 | 87 | 189,474 |
| October | 118 | 251,661 | 112 | 253,721 |
| September, 1931 | 104 | 213,204 | 102 | 226,192 |

### Seattle

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 36 | 160,585 | 32 | 143,574 |
| May | 43 | 184,393 | 41 | 170,652 |
| April | 40 | 171,346 | 43 | 191,352 |
| March | 43 | 190,082 | 43 | 180,862 |
| February | 50 | 217,837 | 54 | 232,138 |
| January | 48 | 200,281 | 50 | 216,819 |
| December | 50 | 218,018 | 48 | 204,111 |
| November | 48 | 209,655 | 50 | 215,614 |
| October | 61 | 257,329 | 62 | 267,366 |
| September, 1931 | 52 | 229,687 | 50 | 217,517 |

### New Orleans

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 170 | 597,552 | 164 | 457,960 |
| May | 182 | 517,523 | 169 | 472,154 |
| April | 192 | 558,681 | 194 | 559,824 |
| March | 200 | 604,269 | 196 | 589,805 |
| February | 157 | 436,882 | 169 | 469,296 |
| January | 171 | 516,707 | 171 | 506,411 |
| December | 169 | 482,802 | 170 | 504,981 |
| November | 173 | 498,800 | 169 | 483,099 |
| October | 174 | 502,867 | 195 | 563,095 |
| September, 1931 | 171 | 474,876 | 179 | 508,560 |

### Charleston

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net. tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 26 | 80,438 | 25 | 78,864 |
| May | 29 | 80,415 | 27 | 71,288 |
| April | 21 | 53,404 | 21 | 57,341 |
| March | 37 | 131,723 | 36 | 110,353 |
| February | 32 | 88,616 | 27 | 75,262 |
| January | 24 | 73,488 | 22 | 16,217 |
| December | 37 | 108,083 | 35 | 96,490 |
| November | 19 | 31,125 | 11 | 35,588 |
| October | 20 | 49,738 | 22 | 55,371 |
| September, 1931 | 16 | 29,428 | 11 | 19,111 |

### Galveston

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 28 | 47,046 | 81 | 226,542 |
| May | 38 | 84,468 | 86 | 259,026 |
| April | 44 | 97,609 | 106 | 297,282 |
| March | 32 | 61,079 | 109 | 319,013 |
| February | 27 | 64,866 | 101 | 317,095 |
| January | 26 | 73,215 | 92 | 292,274 |
| December | 37 | 113,327 | 111 | 358,950 |
| November | 33 | 81,906 | 101 | 328,883 |
| October | 35 | 80,748 | 112 | 354,607 |
| September, 1931 | 27 | 63,896 | 99 | 320,127 |

### Los Angeles

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | ..... | ..... | ..... | ..... |
| May | 229 | 691,109 | 164 | 650,539 |
| April | 189 | 617,325 | 222 | 635,301 |
| March | 168 | 622,067 | 188 | 611,770 |
| February | 164 | 627,876 | 158 | 622,730 |
| January | 144 | 578,699 | 149 | 594,384 |
| December | 153 | 517,165 | 136 | 506,985 |
| November | 147 | 503,238 | 142 | 535,870 |
| October | 215 | 720,162 | 193 | 678,776 |
| September, 1931 | 199 | 580,683 | 196 | 593,882 |

### San Francisco

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 133 | 588,465 | 132 | 590,158 |
| May | 154 | 669,735 | 152 | 649,509 |
| April | 146 | 663,647 | 144 | 613,085 |
| March | 139 | 645,331 | 162 | 709,778 |
| February | 149 | 638,222 | 144 | 583,030 |
| January | 145 | 635,218 | 147 | 646,987 |
| December | 155 | 649,915 | 122 | 579,608 |
| November | 167 | 688,934 | 149 | 614,482 |
| October | 167 | 688,934 | 149 | 614,482 |
| September, 1931 | 158 | 658,088 | 159 | 673,120 |

### Houston

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No ships | Net tonnage |
|---|---|---|---|---|
| June, 1932 | 20 | 93,807 | 31 | 119,752 |
| May | 29 | 122,192 | 36 | 149,039 |
| April | 31 | 131,585 | 39 | 155,861 |
| March | 27 | 113,624 | 43 | 167,956 |
| February | 25 | 103,589 | 43 | 162,236 |
| January | 25 | 108,322 | 36 | 145,084 |
| December | 26 | 99,354 | 42 | 148,568 |
| November | 34 | 139,899 | 62 | 225,833 |
| October | 28 | 126,071 | 52 | 194,114 |
| September, 1931 | 34 | 132,684 | 45 | 163,144 |

Note: The figures given in this table are for direct entrances and clearances. Additional vessels in foreign trade enter and clear from and to other American ports after original entry and before final departure. At the port of Philadelphia, for instance, additional vessels in the foreign trade in this category were 57 of 181,699 net tons entered and 59 of 185,302 net tons cleared for the month of May.

# Latest Data on New Marine Work

## Information on New Ships Ordered—Building and Repair Contracts Let—Shipping Board Loans Made, Authorized or Pending

THE completion of the greatest merchant shipbuilding feat in the United States will be marked by the sea trials of the S. S. MANHATTAN when she leaves the yard of her builder, the New York Shipbuilding Co. on July 23, for Rockland, Me. The trials over the navy measured mile, as this is written are scheduled for Monday, July 25. The remaining trials at sea are to be conducted on her return voyage from Rockland to New York where she is expected to arrive on July 26 and where she will be delivered to her owner, the United States lines.

During the trials tests of her steering gear, pumps, ventilating and refrigerating systems will be made. It is planned to make her sea trials exacting in every respect; more so, than for any merchant liner up to this time. She will be put through every possible maneuver that she may be called upon to meet when she enters actual service in transatlantic trade. Complete fuel and speed tests will be made. The contract speed is 20 knots and it is expected that she will easily develop sufficient power to materially exceed this speed.

An elaborate reception for the MANHATTAN, the first vessel built in the United States for transatlantic trade for 35 years, has been planned when she steams into the New York harbor. She is to sail on her maiden voyage from New York for Hamburg via the Channel ports on Aug. 10, in command of Capt. George Fried.

Full bookings on her maiden voyage have already been reported. It is also expected that she will have an unusually large allotment of mail. Basil Harris, vice president of the Roosevelt line, general agents, who recently returned from abroad, said that the MANHATTAN is booked solidly on her first westbound passage from Hamburg on Aug. 24.

A complete fully illustrated article describing the MANHATTAN will be published in September issue of MARINE REVIEW. The cost of building the MANHATTAN is about $10,500,000. She is 705 feet in length, has a beam of 86 feet and accomodations are provided for 1161 passengers of which 550 are cabin, 400 tourist and remainder third class.

## French Liner Champlain

The CHAMPLAIN, new French cabin liner arrived in New York June 25, on her maiden voyage from Havre via Plymouth. An average speed of 19½ knots was attained during the voyage, leaving Havre at 1:00 p.m. June 18, Plymouth at 12:00 p.m. and reaching the Ambrose lightship at 11:50 a.m., June 25.

The CHAMPLAIN is similar to the LAFAYETTE except that her motive power is single reduction turbines, instead of diesel engines. Total horsepower developed with twin screws is 25,000. There is a high pressure, medium and low pressure unit for each shaft.

The vessel is 607 feet long between perpendiculars, 82 feet 8 inches in beam and has a gross tonnage 28,912 and a net tonnage of 16,146.

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On May 1, 1932, the Burmeister & Wain Co. had supplied 700 ships of 4,016,397 gross tons with 2,740,281 indicated horsepower in diesel engines.

## New French Super Liner

The new French super liner now under construction at St. Nazaire, France, will be named the PRESIDENT DOUMER when she is launched on Oct. 29. She will be commissioned for service early in 1934. Reputed to be the largest liner in the world, she will be 1020 feet in length, more than 60,000 gross tons and of 70,000 tons displacement.

Her aggregate cost it is estimated will be $30,000,000. Her speed is not known exactly, but it is understood that she will make over 28 knots, making her one of the five fastest liners of the world. Her propulsive power is to be turbine electric drive. Accommodations will be arranged for 2132 passengers in four classes, 849 in first, 258 in the second, 485 in the tourist and 540 in the third class.

One of her unique features will be three large stacks, stepped down in height from the first to the third, which is intended to produce an effect of speed and rakishness. Another peculiarity of the funnels is that they will be split into two parts above the deck so that standing at the forward end a clear view is possible all the way aft.

Another feature incorporated in the arrangement of living accommodations in portions of the new liner as a little city or town with the companion ways and lobbies named after streets and plazas in New York and Paris. A theatre on board will seat 500 people and the chapel, two decks in height, will accommodate 200. One of the public rooms, a winter garden, will measure 70 by 100 feet and it will have a semicircular terrace cafe at the after end incorporating the features of a deluxe night club.

Some idea of the immense size of the new vessel may be had in its beam of 117 feet, load draft of 37 feet, depth to promenade deck, 92 feet; and height from waterline to top of mast, 202 feet.

## Philadelphia Mail Line

Nearly three years ago the Pennsylvania railroad, the Baltimore & Ohio railroad and the Reading Co. organied the Philadelphia Mail line with a paid in capital of $2,000,000. The Pennsylvania road contributed $1,000,000 and each of the others $500,000 for a service from Philadelphia to Liverpool and Manchester.

After an inspection of the recently converted cargo liner SCANMAIL of the American Scantic line, during her maiden voyage from Philadelphia to New York the decision was reached by directors of the Philadelphia Mail line and an announcement made by H. J. Horan, chairman of the finance committee, urging immediate acquisition of five Hog island type steamships with the view of converting them into passenger and freight carriers for a direct weekly passenger and cargo service between Philadelphia, Liverpool and Manchester.

The present proposal is to acquire the five ships from the fleet of the American Scantic lines, managed and operated by Moore & McCormack, Inc. and to convert them in the same manner as the SCANMAIL, SCANPENN, SCANYORK and SCANSTATES. The total cost of doing this work of these four ships was about $1,500,000. Each ship has been provided with accommodations for 74 passengers, all in outside rooms. There is also 20,000 cubic feet of refrigerated cargo space.

This action was greatly influenced by the members of the finance committee seeing for themselves what a wonderful transformation had been made in the passenger cargo liner SCANMAIL. This vessel and her sister ships are now among the most comfortable and attractively appointed American ships of their size. So impressed was the finance committee chairman, Mr. Horan, that he is now actively reviving the plans which were delayed due to business conditions.

## Building Army Dredges

Toward the end of June the Dravo Contracting Co. had under construction for the United States war department, corps of engineers, one self-propelled sternwheel dredge of the dustpan type, named the DUNDEE and two 20-inch self-propelled sternwheel cutter type dredges named STE. GENEVIEVE and GRAFTON.

The Pittsburgh office of the United States engineers recently awarded a contract for one 2½ yard dipper dredge to the McClintic-Marshall Corp. This dredge is to be named the BEAVER and is designed for river channel dredging in the Pittsburgh district. It is steam operated. The main engine is designed for a line pull of 50,000 pounds and will remove on the average 1350 cubic yards of material per eight-hour day with a 2½ cubic yard dipper. Quarters are provided for a crew of 20.

The hull is of steel and the dredge is to be completed by Oct. 18, 1932. The length overall is 100 feet; beam, molded, 34 feet; depth molded, 8 feet. The draft aft is 3 feet 3 inches and forward 5 feet 3 inches; displacement loaded. 439 tons. Bunker fuel capacity is 27 long tons of coal. Maximum digging depth is 25 feet.

The main engine is a two-cylinder two-drum steam hoisting engine, 11 inches by 16 inches. The indicated horsepower is 150 at 250 revolutions per minute. There is one boiler of Scotch dry back type built by Titusville Iron Works Co. The boiler has 1530 square feet of heating surface and the working pressure is 150 pounds gage . Coal is used for fuel.

## Danish Training Ship

The Danish government has authorized the building of a three-masted full rigged ocean going sailing vessel as a training ship for merchant marine officers. Present law in Denmark requires all persons applying for licenses as mates to have four years at sea, one and one-half years of this time on sailing vessels. Since sailing vessels are now scarce the new training ship will enable candidates to comply with the requirements.

Though a full rigged sailing vessel, the new ship will be equipped with a 250 horsepower diesel engine for auxiliary motive power and for power for deck machinery and electric plant. She will be of 1000 net tons, 180 feet 5 inches in length and a beam of 32 feet 10 inches. Accommodations will be provided for 120 men.

## High Speed for Freighter

In the July issue of MARINE REVIEW reference was made to the successful sea trial of the BLACK EAGLE, first of six vessels undergoing modernization for the American Diamond lines at the Federal Shipbuilding and Dry Dock Co., Kearny, N. J.

On July 13, the steamship BLACK HAWK, second of this fleet of six vessels was given her sea trials between Ambrose and Fire Island lightships. She attained the remarkably high speed, for her class of vessel, of 15.78 knots. Company officials believe this a record for American cargo ships.

Before reconditioning the BLACK HAWK was rated as a 10-knot ship. An increase in speed from 10 to nearly 16 knots is an unusual feat. The new speed is well in excess of the requirements of the post office department of 14 knots according to the agreement in the mail contract.

The BLACK HAWK was scheduled to sail from Weehawken for Antwerp on July 16. The voyage, it is expected, will be made well under ten days.

Credit for the increase in speed of the two vessels so far placed in service is given to M. J. Hanlon, operating manager of the American Diamond lines for his suggestions for the streamlining of the hulls. It is now clearly established that the conversion is producing more than the anticipated results in speed because the first of these vessels, the BLACK EAGLE attained a speed on trials of 15.36 knots. Furthermore this vessel demonstrated her ability to average high speed by crossing from New York to Flushing in 9 days and 20 hours.

Announcement has been made changing the corporate name of the International Compositions Co. Inc. to International Paint Co. Inc., effective June 16, 1932.

## Launch Dipper Dredge

A 120-foot all-steel turbine dipper dredge, the first of its kind ever built, has been launched at the yards of the Manitowoc Shipbuilding Corp., Manitowoc, Wis. The dredge, with a dipper capacity of 6 cubic yards, is being equipped by the Bucyrus-Erie Co., South Milwaukee, Wis., for the Great Lakes Dredge Co. Bucyrus-Erie sublet the hull and will make the installation of complete equipment at the Manitowoc yards. The dredge will have accommodations for a crew of 34 and a fuel oil storage capacity of 20,000 gallons. It is the eighth piece of floating excavating machinery that has been built for Great Lakes at the Manitowoc yard in recent years. The new unit is named TURBO and was christened by Mrs. George H. Jackson, wife of the secretary of Great Lakes company, in the presence of a distin guished company of witnesses.

## Status of Cunard Liner

Report that work on the Cunard super liner, known as Hull No. 524, on the stocks at John Brown & Co., Clydebank, would be resumed in the near future, has been denied.

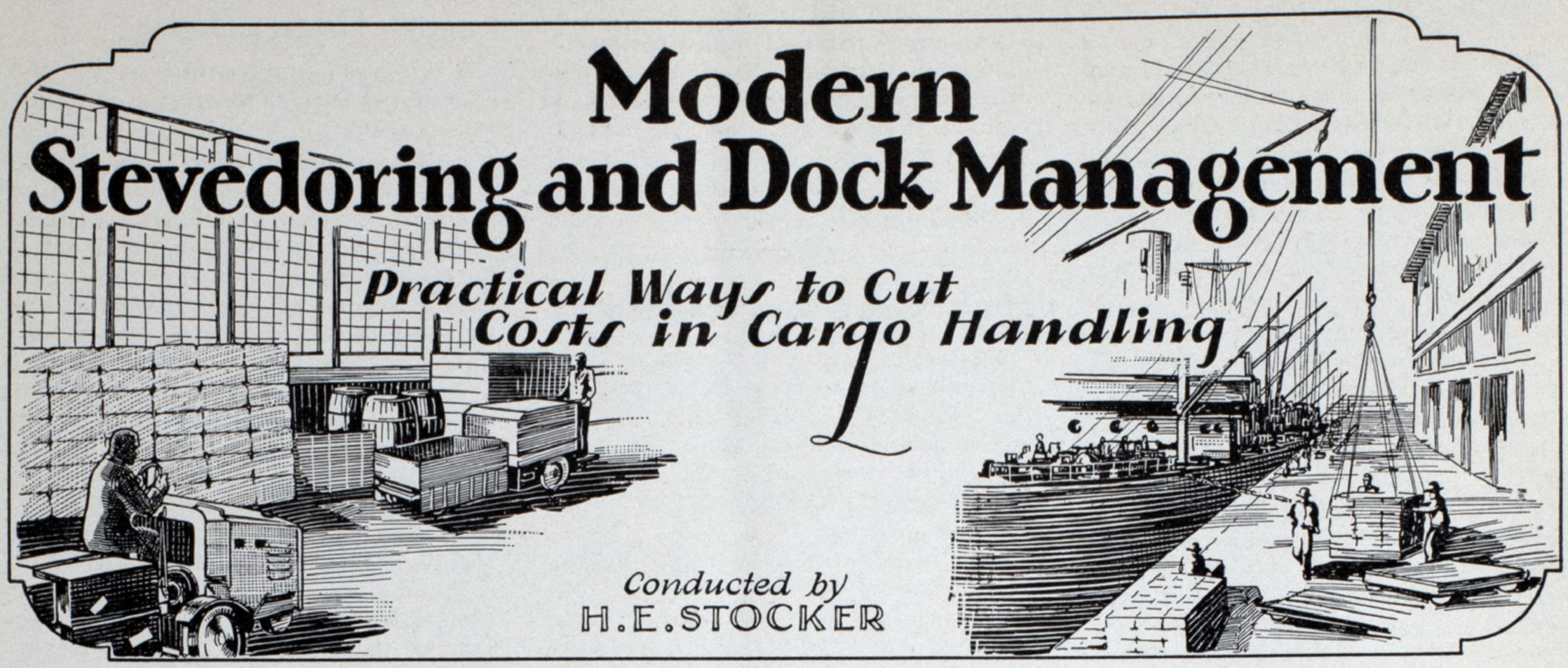
Had work continued, she would have been launched in June. As it is now, it is not thought likely that building will be resumed until there has been a definite change for the better in world conditions.

When laid down the new Cunarder was intended to be the largest and fastest vessel in the world. She will be of 73,000 gross tons and have a length of 1018 feet and a speed of 30 knots. This length. incidentally is now exceeded by the reported length of the new French super liner PRESIDENT DOUMER. The new Cunarder is designed with the view of making the crossing from Southampton to New York in an even four days.

Contracts have recently been placed for three 38-foot patrol boats to be named RANGER, SKIRMISHER and SPY. These three boats will be ready in September and will bring the department's fleet up to a total of 12 vessels.

## Bunker Prices

| | At New York | | | At Philadelphia | | | Other Ports | |
|---|---|---|---|---|---|---|---|---|
| | Coal alongside per ton | Fuel oil alongside per barrel | Diesel engine oil alongside per gallon | Coal trim in bunk per ton | Fuel oil alongside per barrel | Diesel engine oil alongside per gallon | July 16, 1932 | |
| July 18, 1932 | 4.50@5.00 | .90 | 4.04½ | 4.50@5.00 | .90 | 4.08 | Boston, coal, per ton.. | $7.11 |
| June 18, .... | 4.50@5.00 | .80 | 3.70 | 4..50@5.00 | .80 | 3 69 | Boston, oil, f. a. s., per barrel..... | 0.66½ |
| May 18, ..... | 4.50@5 00 | .75 | 3.70 | 4.50@5.00 | 80 | 3.69 | Hampton Roads,coal,per ton. f.o.b.,piers..... | $4.25 |
| April 18, ..... | 4.50@5.00 | .70 | .... | 4.50@5 00 | .75 | 3 21 | Cardiff, coal, per ton... | 13s 6d |
| Mar. 18, ..... | 4.50@5 00 | .65 | 3.25 | 4.50@5.00 | .65 | 3.21 | London. coal, per ton... | —s –d |
| Feb. 18..... | 4.50@5.00 | .65 | 3.25 | 4.50@5.00 | .75 | 3.45 | Antwerp, coal, per ton.. | 18s 0d |
| Jan. 18..... | 4.50@5.00 | .65 | 3.25 | 4.50@5.00 | .75 | 3.45 | Antwerp, Fuel oil, per ton. | 67s 6d |
| Dec. 18..... | 4.50@5.00 | .65 | 3.25 | 4.50@5.00 | .75 | 3.45 | Antwerp, Diesel oil, per ton..... | 82s 6d |
| Nov. 18..... | 4.50@5.00 | .65 | 3.25 | 4.50@5.00 | .75 | 3.45 | British ports, Fuel oil... | 67s 6d |
| Oct. 18..... | 4.75@5.00 | .65 | 3.25 | 4.75@5.00 | .75 | 3.45 | British ports. Diesel oil. | 82s 6d |
| Sept. 18,..... | 4.75@5.00 | .75 | 3.47½ | 4.75@5.00 | .75 | 3.45 | | |




# Simplifying and Planning Clerical Work Will Reduce Operating Costs

By H. E. Stocker

THERE is a right way and a wrong way to do a specific piece of clerical work. Once the right way is decided upon, it should be followed uniformly because accuracy is acquired through uniformity. Accurate paper work is necessary to avoid lost motion and frayed nerves and ultimately reduced profits. Accurate records are obtained with the minimum of time, money and effort where a definite standard routine is established and followed consistently. The details of the work are performed in an habitual manner once the good habits are established by the efforts of the management. The established method becomes known to all concerned and friction, due to varying opinions and argument as to how the work should be done, is avoided.

Once a definite routine has been established and distributed in typed or printed form, it should not be changed except after thorough investigation discloses a better method. When the proposed change is under study, all concerned, however small their part in the organization may be, should be considered, to make certain that the change is thoroughly practical and will reduce cost, reduce time or improve the accuracy of the work.

Manifests should be prepared in a uniform manner so that one will always know just where to look for certain information. When the last bill of lading is added to the manifest, the word "final" should be typed under this last entry to indicate that the manifest is completed. The bill of lading for each port of loading should be numbered. Separate numbering for an LCL manifest is confusing and should be avoided.

All documents and records showing steamer number should also show voyage number. Time is lost identifying records when this is not done. An over, short, or damaged report with steamer name and sailing date only, often necessitates looking up the voyage number.

The utilization of technical knowledge which is available on the performance of typing and other office work has proved profitable. This knowledge should be utilized, first for the elimination of all time wasting methods, second for the development of skill and third for the development of speed. The correct relationship of the operator to the typewriter is important and may be used as an illustration of the value of applying the proper methods. The position used by champion typists is to have the machine higher than is usual in offices. The slope of the keyboard should coincide with the forearm of the operator.

A note book holder should be placed at the back of the machine to support the copy. Twisting the head or leaning over to read copy is fatiguing and reduces output. Correct insertion of sheets of paper into the machine is important. The sheet should be picked up with the left hand and placed squarely behind the roller and against the apron of the machine. If the paper is not inserted properly, it will set crookedly on the roller and time is lost making adjustments.

The carriage of the machine should be thrown back with a sharp, quick stroke, with just sufficient force to send it all the way back to the starting point of the new line. When this motion is performed correctly, the carriage is not only returned but the roller is turned into position for writing the next line. The difference in the speed of performing this operation correctly and incorrectly is two or three one hundredths of a minute. Since it is done 15 to 50 times on one letter the saving is evident.

Removal of the paper from the machine is another factor in performing a typing operation efficiently. At the end of a page, the paper should be thrown over quickly by turning the twirler knob with the left hand while the right hand simultaneously grasps it and places it on its pile, face down. The left hand immediately takes a fresh sheet of paper from a pile nearby and places it in the machine.

All that could be written on typewriting technique cannot be covered here. That which has been given is given to illustrate the nature of this technique rather than to describe it in full detail. I am indebted to W. H. Leffingwell, specialist on office management, for the above information on

correct technique involved in typing.

Typing the name of the person signing a letter at the place reserved for the signature avoids difficulties which arise when the receiver is not able to read the signature. When this practice is followed in inter-company correspondence, initialling the typed signature is all that is necessary.

When a clerk is checking freight bills against the manifest to determine if they have been correctly typed, accuracy and speed is improved and nerve tension decreased by checking the items across the manifest from left to right.

A calculating machine is essential in even a small office and will pay for itself in the speed with which accurate work can be performed. Manifest extension and statistical work can be performed with the minimum of wear and tear on the personnel when a calculating machine is available. When a clerk has acquired a little skill in its operation, a column of figures can be added and checked quickly and the result used with confidence. The same is true of other calculations.

When starting in the use of a calculating machine the best results are obtained by going slowly and acquiring speed as a natural development.

Calculating tables are useful where there are repetitive calculations. For example, a line may have numerous shipments of 100,750 pounds at a rate of 20 cents a 100 pounds. This calculation once made can be placed in a calculating table. This table can be referred to when the bills of lading and manifests are prepared and checked. The use of such tables is more rapid than making such calculations on a machine.

In a well planned office effort is directed to avoid duplicating work. For this reason the fanfold method is used. An intercoastal line utilized the same basic idea by combining in one operation the typing of the manifest, freight bill, notice of shipment and arrival notice, and all other papers used in handling a shipment. Each of these documents were of the same size and so ruled that the one typing operation could be performed to cover all. Time is saved in phoning a large number of people one after another by making a list and giving it to the switchboard operator instructing her to make the calls one after the other, identifying each call by giving enough of the name of the companies called to identify it. For example, New Haven and not New York, New Haven and Hartford Railway company.

The same list can be used each week or at whatever interval the calls are made.

An effective help in judging the value of clerks is a record of mistakes made. By calling with proper tact the attention of a clerk to his errors a clerk who is essentially a good clerk will be stimulated to improve, while a clerk of poor material will be quickly recognized and placed in another position or dismissed. Such records help to eliminate personal prejudices in making decisions that effect company profits.

A well planned stowage plan supplemented with hatch list shows the location of all carload and similar lots of cargo so the time of discharge can be estimated with reasonable accuracy. Car number and other information should be shown on the plan. Less than carload lots of cargo is shown as one lot or more in each hold, not each package separately. It is often helpful if the flour, lumber and other large moving commodities are indicated in color. Necessary information for discharging heavy lifts should be shown on the plan.

Teletypes connecting offices at various ports is advantageous when the volume of business is fairly large. Messages can be interchanged with great speed.

A card record of all rate quotations obtained from railroad, steamship and trucking companies is valuable and saves time because additional calls for the same information are often avoided.

Claim records and forms when well planned reduce the amount of work necessary in handling this class of work. A claim record or form should be planned only after studying the records forms used by other lines. This serves to assure the best available for the purpose and often avoids mistakes.

A claim register should be printed on large sheets so the information on each claim extends on one line clear across the sheet. When arranged in this manner, the claim register is a valuable aid in locating claim files quickly when the claim number is not known. For example, if a letter arrives from a shipper referring to his claim number N. Y. U 3165 in the amount of $8 65 the steamer line claim number may be obtained quickly by running down the amount column or the shipper's claim number column. A form giving an abstract of the claims is a time saver for all who may be called upon to review the details of the claim.

All except unimportant claims should be passed to the pier superintendent for study. The checkers involved should be interviewed and any mistakes on their part pointed out. For example, exceptions taken by checker may be inadequate to protect company against damage at time of receipt. Reviewing claims with checkers is valuable training for them and tends to reduce claims by gaining greater care on the part of the men.

Over, short and damage reports should be filled out uniformly. Placing car numbers in one part on one voyage and another part on another voyage is confusing and causes lost motion. Copies should be sent to operating manager, to loading pier and claim agent. These men should make an immediate investigation of all important items particularly large shortages, so that the facts may be ascertained while memories are comparatively fresh.

A special form listing loss of whole packages at each port on each voyage has served to assist in reducing shortages for a large intercoastal line. This form brings the attention of the pier superintendent and others involved forcibly to realize the importance of drastic steps to stop this serious waste.

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ALL organizations, including steamship companies, are so dependent on the human element that a counsel of perfection is met with natural despair born of experience. This does not, however, excuse laxity or indifference in exercising vigilance for constant improvement in efficiency. It is clear that in a successful organization no detail of operation is too insignificant to merit intelligent planning to reduce cost. A good organization presupposes careful supervision on the part of all those in charge in order to establish the best ways and means of accomplishing every operation. With proper management no form of inefficiency will be tolerated because its elimination is recognized as a practical attainment.

Editor's Note

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## Northwest Port Facilities

Chairman T. V. O'Connor of the United States shipping board recently announced the issue of a new publication in the port series, jointly prepared by the bureau of operations of the shipping board and the board of engineers for rivers and harbors of the war department, describing the ports of Astoria, Ore. and Longview and Vancouver, Wash. The volume consisting of 160 pages, illustrated with maps, photographs and charts, presents a study of a wide variety of subjects of interest to steamship owners and operators, shippers, importers and exporters and others desiring authentic data in convenient form on these three Columbia river ports.

# Slinging Trailers Overall Reduces Loading Costs

By H. E. Stocker

THE Canadian Pacific Steamship Co.'s ocean terminals at Montreal and St. Johns, N. B. are using the tractor and trailer method of operation with great success in handling cargo to and from steamers. Seven months of the year, May 1 to Dec. 1, the operation goes on at Montreal. After the close of navigation, the tractor and trailers are moved by rail to St. Johns, N. B., where they are used during the period of closed navigation on the St. Lawrence river.

The company owns 800 trailers all fitted with automatic couplers, also 30 heavy duty machinery dollies. Ten electric storage battery tractors do the hauling. The equipment, together with extra batteries and motor generator set, cost $150,000 delivered at Montreal. This large expenditure will have paid for itself in direct savings in less than three years. If tonnage had held up to the figure at the time the study of the possibilities of tractor and trailers was made, the pay-off period would have been considerably shortened.

### Cargo Moved On Trailers

The King Edward pier at Montreal where the equipment is used, is about 1200 feet long and 300 feet wide with four two deck sheds each almost 100 feet wide. In the center of the pier is a 50-foot roadway for trucks. On each side of this roadway are two railroad tracks. Ramps run from the roadway up to the shed floor and are used by street trucks and tractors and trailer trains. Elevators serve the upper deck of the sheds.

Cargo is received from railroad cars and street vehicles and usually is loaded directly onto trailers. Cargo arriving ahead of steamers is, so far as practical, kept on trailers until loaded into the ship. Large heavy cases are not loaded directly from box cars to trailers because it has been found less expensive to handle these with hand trucks from car to shed floor near the car door, where they are trucked on to a trailer with the aid of a short portable ramp. The maximum effectiveness of tractors and trailers is attained when conditions permit a cycle of operations as observed on this terminal.

When the ship is ready to load, a tractor picks up five trailers and hauls them along the ship opposite one of the hatches. The trailer train is uncoupled and the tractor proceeds to get another train of five trailers for a second hatch, while the first group of trailers is slung overside into the ship where they are unloaded. By the time the five trailers have been taken into the ship, the tractor has returned with another group of five loaded trailers. The empties are picked up and returned to the shed, for loading at cars recently arrived.

This method of operation gets the maximum work from the tractor and keeps the ship's hoisting gear fully supplied with cargo.

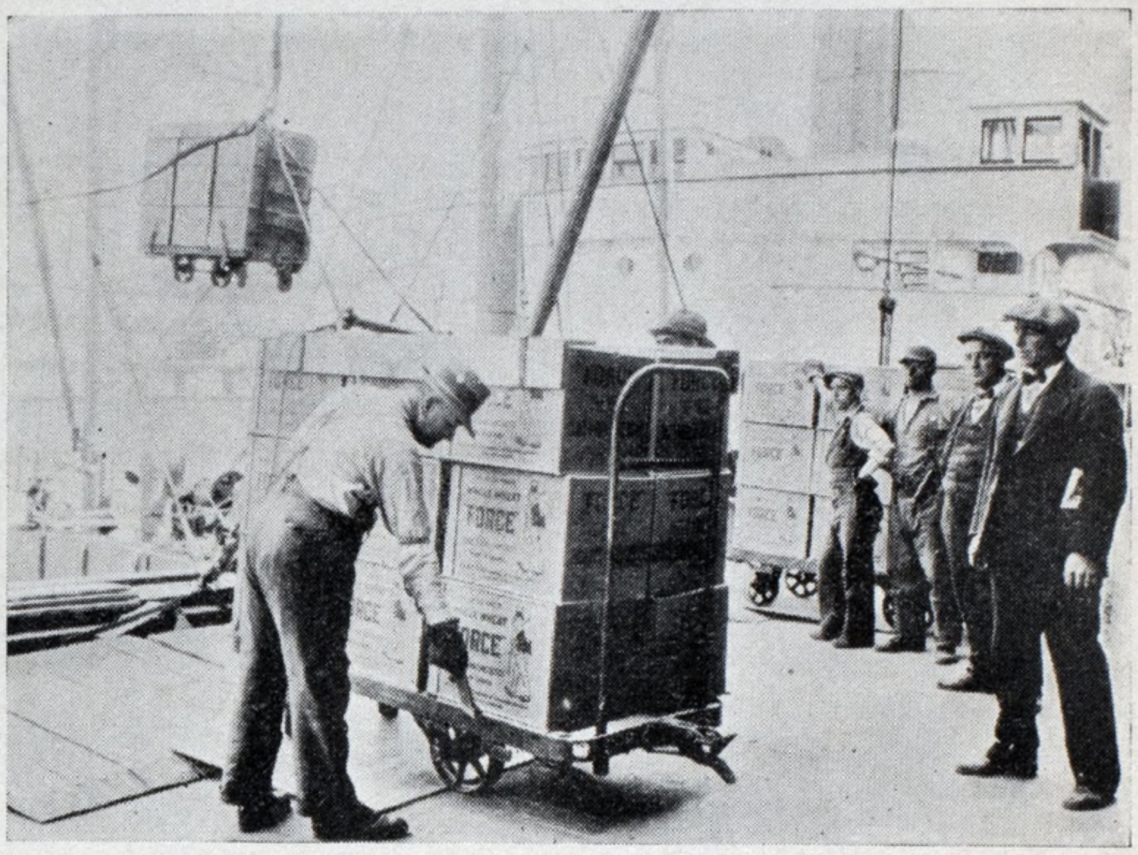
The growing practice of slinging trailers overall into the ship is highly developed in this operation. A special type of sling was designed which combined the maximum of safety with the maximum of efficient operation. The general design of this sling is shown in the illustrations.

### Landing Trailers In Hold

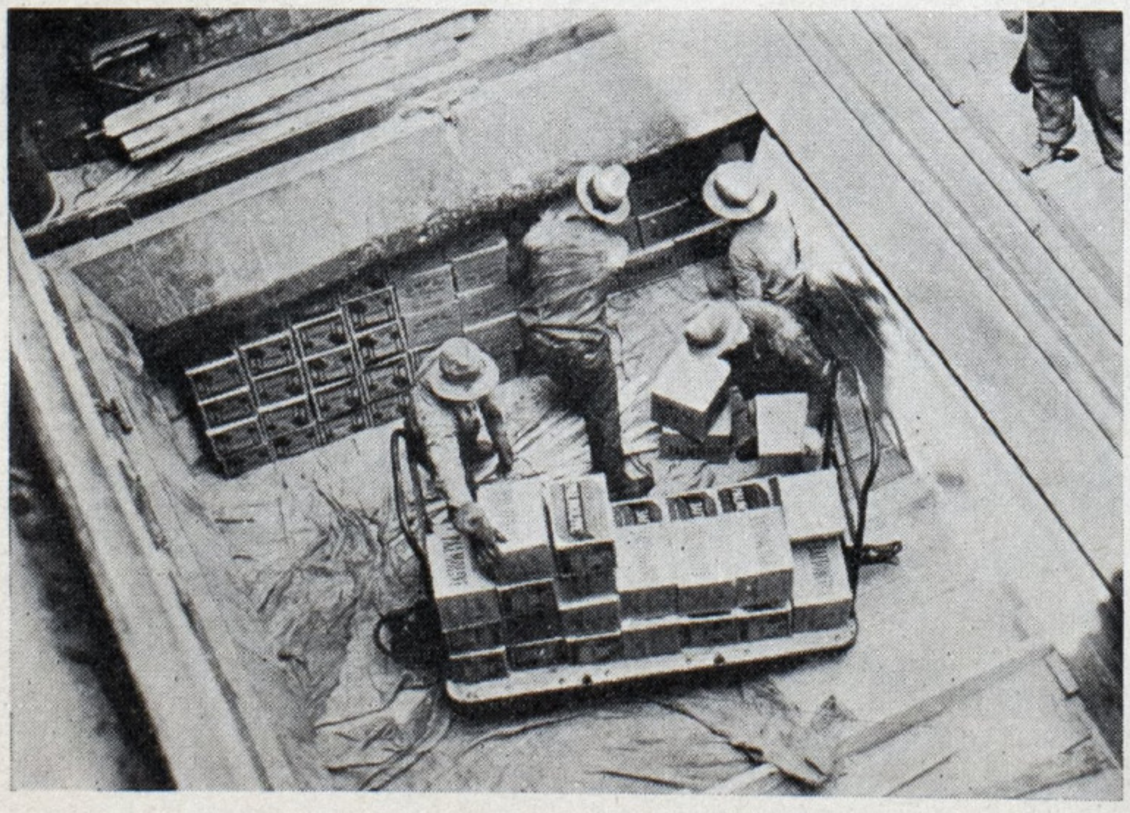
Trailers are landed not only on the 'tween and shelter decks of the ship but on a steel track placed on top of flour and other cargo. Damage to the cargo is prevented by landing the wheels of the trailers in the tracks which are made of two pieces of channel iron 6 inches wide held together with two steel cross pieces. This track can be moved about easily as the stowage proceeds since it weighs only 180 pounds. It is 10 feet long and 26¼ inches wide.

The reduction of handling that resulted with the installation of tractor trailer equipment brought about a reduction in damage to cargo. Cargo which is loaded onto a trailer in a car and slung into the ship is handled only twice. Formerly when two wheel hand trucks were used each package was handled eight times between car and point of stowage.

Working conditions on the terminal have been improved by elimination of hand trucking. Service to the public has been improved by faster handling of trucks.



*Effective use of the tractor and trailer method of cargo handling has been developed by the Canadian Pacific Steamship Co. Preparing a trailer for transfer to ship's hold*



*Unloading and stowing boxes of soap in the hold of a Canadian Pacific ship from a trailer which had been transferred overall in a complete unit from the dock to the ship's hold*

# Useful Hints on Cargo Handling

*THIS page is being devoted to short items on all matters having to do with the more efficient turn-around of ships. These items are intended to be of a helpful nature.*

*We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.*

BEESWAX, paraffin and several other kinds of wax shipped in cases, bags or bales should be stowed in a cool place and not over other cargo if high temperatures will be met with, as the wax may turn soft and cause damage to cargo lying underneath. In warm weather such shipments must be stowed under other cargo but not with any heavy pressure on it, as that may cause the wax to solidify and it will consequently have to be chopped out and suffer great loss in weight when discharging it. Candles and other articles made of wax are always shipped in cases, but should nevertheless be stowed as cool as possible.

Cheese should be stowed in the coolest and best ventilated space in the ship; in the lower holds in the summer time and in the tween decks in the winter time, as the temperature in the holds will be found most favorable in these spaces according to the seasons. It should, on account of its sweating properties, not be stowed above any cargo that may take damage by liquefying and drainage which often happens in such shipments when exposed to high temperature. Neither should any cargo be stowed above it as that prevents the ventilation which is absolutely necessary for such shipment.

Shipments stowed alongside of it should always be dunnaged up with boards so that the drainage may not cause any damage to such shipments.

Wet salted hides should be stowed in the cooler compartments of a ship. Dry hides and bales of wool may be stowed in warmer spaces where such cargo does not suffer any damage.

## General Cargo Stowage

WITH all general cargoes it is important that the holds be well ventilated. As a large variety of goods is often stowed together in one hold the nature of some of them is such that damage may be caused to other articles by heating or steaming, or by odor, or by change of consistency, such as rotting in an unventilated space. As a rule the ship will be held liable for such damage.

Certain commodities, such as rice, cocoabeans, bone meal, all fertilizers, fruit, nuts, etc., generate heat which will ordinarily cause sweat. This sweat reacting on these commodities, will cause more heat to be generated, causing more sweat. New rice, when loaded, should have ventilating shafts built in amongst the shipment, both longships and thwartships, connected up and extended to the deck in the square of the hatches and under the ventilators. The moisture and heat generated from such shipments should then be taken care of by opening the hatches whenever possible in dry weather, but not in moist weather. When there is not much difference in the temperatures inside and outside, the ventilators should be used to force dry fresh air into the cargo, letting the foul moist air escape through the hatches.

## Care in Stowing Fruit

FRUIT must be stowed in such a way that circulation of air may be brought about throughout the whole shipment. It should be stowed in the coolest and best ventilated part of the ship, and the ventilation must be constantly attended to during the entire time the shipment is on board. Fruit, nuts, and vegetables require more ventilation than any other kind of cargo and a low temperature must be maintained from the time the shipment is received on board. A steamer carrying only fruit and vegetables should not cover the hatches until it is absolutely necessary for the safety of the ship. When open, the hatches should be protected from the sun and spray by awnings.

When fruit is taken out of cold storage it is affected by high temperatures more quickly than fruit which has not been in cold storage. Fruit grown in tropical climates will not stand such low temperatures as fruit grown in colder climates. The ideal temperatures in degrees Fahr. for various sorts of fruits are the following: Bananas, 55; apples, oranges, pears, 33 to 35; vegetables, potatoes, 33 to 40.

The master of the ship must therefore seek to attain as low a temperature as possible and at the same time circulate the air so as to force out the hot, foul air generated by the ripening and decomposition of the fruit. It must be remembered that the ideal temperatures mentioned for fruit are the minimum permissible temperatures for the varieties named. If the temperatures are allowed to fall below these ideal figures, serious damage will result from freezing or frost.

## Temperature Variations

IT IS interesting to note the comparatively wide variation in the temperature for the cold storage of various articles. For instance, chilled beef should be kept at from 32 to 33 degrees Fahr. while frozen beef should have a temperature of from 18 to 22 degrees Fahr. and fresh meat from 35 to 40 degrees. Dairy butter should be kept in a temperature from 34 to 38 degrees; cream at 35 degrees; eggs at 33 to 35 degrees, dried fish at 35 degrees and fresh fish at 25 to 30 degrees. Chocolate should be stored at a temperature of from 40 to 45 degrees Fahr., and sugar the same; wines should be kept at a temperature of 45 to 50 degrees. Grapes need a temperature from 35 to 38 degrees Fahr. and oranges a temperature of 45 to 50 degrees; peaches, 45 to 55 degrees; and cucumbers, 38 to 40 degrees. Cigars, tobacco and undressed furs should be kept at 35 degrees Fahr. while furs, woolens, etc. should have a temperature of from 25 to 30 degrees.

A steamship owner and operator may not be able to meet these varying conditions exactly, but the day is gone when a mixed cargo can be piled into a ship regardless of location and temperature, trusting to luck that it comes through without serious damage. More and more the ship operator must render to the shippers service of the highest order and reliability, no matter how difficult the conditions may be. The kind of service offered has a great deal to do with attracting patronage.

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One tower at a coal terminal recently loaded five cars of sulphur in 40 minutes.

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Cases not marked adequately are often damaged by handling because the cases must be turned over to find the mark.

# Up and Down the Great Lakes

## Ore Traffic at Low Point—Seventy-fifth Anniversary—June Lake Levels Canadian Shipbuilding—Record Cargo—Supervising Inspector Retires

DURING the past month of June the total American lake movement in Lake Superior iron ore amounted to 233,557 tons as compared with 3,808,043 tons for the month of June, 1931. The total movement of iron ore this year up to July 1, is 388,456 tons, compared with 5,753,259 tons in 1931 up to July 1.

Total traffic through the Canadian and United States locks of the Sault Ste. Marie canals for June this year was only 1,987,882 tons, compared with 6,644,502 tons in June, 1931. The decrease in iron ore tonnage was 3,829,284 tons or from 4,036,666 tons to 207,382 tons. Down bound shipments of grain were also lighter than last year, wheat decreasing from 21,022,089 bushels to 17,904,840 bushels and other grain from 7,020,317 bushels to 4,577,552 bushels. Up bound traffic showed a similar trend, bituminous coal decreasing from 1,306,813 tons to 814,756 tons and anthracite coal from 106,550 tons to 51,420 tons.

It is interesting to note, however, that the total traffic for June through the Welland ship canal was heavier than in the same month of 1931 by 49,058 tons, increasing from 1,015,469 tons to 1,064,527 tons. Wheat was heavier by 42,418 tons, rye, by 52,452 tons and corn by 10,928 tons, gasoline by 38,464 tons and coke by 39,045 tons. Decreases were shown in barley, by 43,309 tons, bituminous coal by 39,805 tons and no iron ore was handled compared with 36,466 tons last year.

## Seventy-Fifth Anniversary

Goodrich lines celebrated its seventy-fifth anniversary at Chicago July 18. Capt. A. E. Goodrich, founder of the Goodrich lines, sailed the steamship HURON out of the Chicago river 75 years ago on its first voyage, opening passenger service to Milwaukee. The HURON, a side wheeler, carried 100 passengers on its first voyage. The first passenger service was coastwise, but immediately after the Civil war across-the-lake service was opened to Muskegon, Mich., then an important lumber port.

## New Lake Michigan Port

Nineteen cities with a combined population of nearly 230,000 will comprise a new port for Lake Michigan when the Illinois waterway is ready for navigation, probably in October. These communities dot the 160 miles of the Illinois river as far south as Pekin, Ill., just south of Peoria, and are nearly as large as Memphis. They are more than twice the size of Charleston or Savanah. River transportation facilities linking a number of manufacturing centers with the Gulf of Mexico via the Mississippi, as well as the Great Lakes, are expected to have a beneficial effect upon these districts, particularly in relieving the constriction effected on the Middle West through the operation of the Panama canal.

## June Lake Levels

The United States Lake survey reports the monthly mean stages of the Great Lakes for the month of June as follows:

| Lakes | Feet above mean sea level |
|---|---|
| Superior | 602.40 |
| Michigan-Huron | 578.64 |
| St. Clair | 574.32 |
| Erie | 571.87 |
| Ontario | 246.05 |

Lake Superior was 0.20 foot higher than in May and it was 0.46 foot higher than the June stage of a year ago.

Lakes Michigan-Huron were 0.08 foot higher than in May and they were 0.54 foot lower than the June stage of a year ago.

Lake Erie was 0.05 foot higher than in May and it was 0.24 foot higher than the June stage of a year ago.

Lake Ontario was 0.09 foot lower than in May and it was 0.62 foot higher than the June stage of a year ago, 0.39 foot below the average stage of June of the last ten years.

## Traffic Shows Decline

Business of lake steamship companies operating out of Chicago so far this season has been well below the volume of a year ago, but is about in line with expectations. Passenger trade has experienced a greater decline than has the movement of freight, although the latter also is restricted. Shipments of fruit are light, considerable of this business having been lost to trucks.

Summer resort and tourist trade has been quiet, reflecting reduced expenditures on vacations on the part of the public. This is particularly true of the more extensive lake trips, although passenger traffic to nearby points of Michigan and Wisconsin also is lighter than last year. Transit lines are featuring short, three and four day cruises to Mackinac, Lake Huron and Georgian bay, with rates averaging as low as $8 per day including all expenses.

## Canadian Shipbuilders

The almost total lack of new work and very little repair work is making it difficult for Canadian shipbuilders to stay in business. After finishing the HYDROGRAPHER for the Canadian government as reported in the July MARINE REVIEW, the Collingwood Shipbuilding Co. faced a complete cessation of new work at its Collingwood, Port Arthur and Kingston yards. There seemed to be no alternative left except closing the yards for the time being at least.

It is assumed that the Ottawa conference will take up the question of some form of protection for Canadian shipbuilders. It has been suggested that a tariff of 30 per cent be levied against repairs outside of the country. The only other way out would seem to be direct aid from the government. One thing is certain. Canadian shipping is bound to suffer if there are no adequate Canadian shipyards to do the necessary repairs expediously.

## Another Record Cargo

The S. S. GLENEAGLES of the Canada Steamship lines set a new record in June by bringing a cargo of 12,912 tons of coal into Hamilton, Ont. The same vessel now holds the record for a cargo of grain of 380,000 bushels of wheat through the Welland ship canal, made, just prior to the coal cargo record, in a voyage from Fort William to Kingston, Ont.

## Captain Johnson Dies

At 90 years of age, Capt. John Johnson, retired founder of the Hand & Johnson Tug line, died at his home in Buffalo on July 12.

He had lived in Buffalo nearly all his life settling there 82 years ago at the age of eight. His career on the lakes began as a seaman when he was 15 years old. In 1878 with the late Capt. George R. Hand, he founded the Hand & Johnson Tug line.

## Ship Cargoes Both Ways Via Hudson Bay

Inward as well as outward freight movements through Hudson bay between Canada and Europe are now assured for this summer according to the Canadian National railways. Arrangements have been completed with the Dalgliesch Steam Shipping Co. to accept shipments from Antwerp and Liverpool for Churchill during the first half of July and an 8000-ton vessel was to be placed in this service. Several European shippers have agreed to send test cargoes over this route and efforts are being made to secure a full load for the first sailing to Canada. Wheat will be carried to Europe as a return cargo.

In addition to the shipment of 2,000,000 bushels of grain through the Hudson bay route to Europe, contracted for early this spring by the Continental Grain Co. New York, two new orders totaling a further 1,200,000 bushels have been placed. One order has been placed by the French exporting firm, Louis Dreyfus & Co. The name of the second concern has not been announced.

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## Increase in Fuel Prices

An increase of fuel oil for ship use from 70 cents per barrel on March 25 to 90 cents on June 21, is a serious matter to steamship companies now operating on none or a small margin of profit. According to one shipping man this increase in fuel cost will mean a difference in the case of some American lines between a profit and deficit. P. A. S. Franklin, chairman of the Roosevelt-International Mercantile Marine Co., called attention to the fact that the last increase of ten cents a barrel raised the operating expense of the United States liner LEVIATHAN by $7500 a round trip and that other American vessels have been affected proportionately. He also maintained that the increase is not justified by present conditions and that the time has come for American shipping interests to investigate the possibilities of burning a combination of oil and powdered coal in order to cut down expenses.

It is thought that Mr. Franklin referred to the reported successful tests with colloidal fuel on the Cunarder SCYTHIA, recently on a voyage between Liverpool and New York. The fuel used on the SCYTHIA is said to have been a mixture of 60 per cent oil and 40 per cent powdered coal and it is claimed that it handled and burned almost as efficiently as the ordinary fuel oil; also that there was little difference in the flame at the burners.

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A directory of steel and alloy castings manufacturers for 1932-33 has recently been issued by the Steel Founders' Society of America, Inc. The new directory contains, besides the names and addresses of these manufacturers, comparative data and statistical information on the industry for the United States and Canada for the years 1929, 1930 and 1931.

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Twin City Terminal & Dock Corp. has been organized by Chicago interests to build a $50,000 warehouse at St. Joseph, Mich.

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## Baltimore Mail Line's First Anniversary

The arrival of the steamship CITY OF BALTIMORE, flagship of the Baltimore Mail line, at Havre, on July 2 on her eastward crossing, marked the first anniversary of the inauguration of service by the newest line on the North Atlantic. The steamship CITY OF BALTIMORE, first of the fleet of five liners now in operation, sailed on her maiden voyage out of Baltimore on July 2, 1931. Since that day she has completed ten round-trip voyages under the command of Capt. Francis E. Cross. The four other ships of the fleet which followed her have a lower number of crossings to their credit. The CITY OF NEWPORT NEWS, baby of the fleet, being now on her sixth round trip. This ship entered service in December.

In the first twelve months the fleet has made a combined total of 38 round trips. During that time nearly 3000 passengers were carried. They came from every section of the country and represented practically every state in the Union. The far Pacific Coast has provided its share, many bookings being from San Francisco, Los Angeles and Seattle.

The last five sailings, all during June and at the height of the eastbound tourist season, have witnessed ships going out with practically every berth occupied. Recertification of the ships to permit carrying of an additional number of passengers was made necessary on June 8 when the CITY OF HAMBURG went out with more passengers than her certification papers provided for.

The line, a favorite with the South and Midwest, also has made of Baltimore a favorite port of Washington travelers, particularly members of the consular service and others in United States government departments. The line operates weekly service from Baltimore and Norfolk to Havre and Hamburg.

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At a special meeting of the general committee of Lloyds Register of shipping held June 16 at London, Sir S. George Higgins, C. B. E. was re-elected chairman for the ensuing year, Arthur L. Sturge, deputy chairman and treasurer, and J. Howard Glover, chairman of the subcommittee on classification.

## Capt. N. B. Nelson Retires After Long Service

So long had Capt. Nils B. Nelson, supervising inspector of the United States Steamboat Inspection service for the ninth district and Silas H. Hunter, local inspector of boilers, held their respective offices that their retirement might be said to mark the end of an epoch. Both were retired on July 1, for age. Captain Nelson is 76 and Mr. Hunter is 72.

The services of Captain Nelson as supervising inspector were so highly thought of that he has had three extensions to continue him in active charge beyond the age at which he would normally retire. He would likely have received another extension had it not been for the passing of the recent bill in congress calling for drastic economies.

Seldom has any decision by Captain Nelson, during his long term of office, been modified by his superiors and not a single one has been reversed, which is a record said to be unparalleled in the steamboat inspection service. He had the respect and confidence to the fullest possible measure of his superiors and of the vessel men of the Great Lakes.

No successor to Captain Nelson has yet been named and it is understood for the time being none will be appointed. When an appointment is made, it is believed that Capt. Thomas W. Gould, for many years local inspector of hulls, is the logical choice.

The selection of Roy B. Huston, assistant inspector of boilers for the past 20 years, as local inspector of boilers to succeed Silas H. Hunter is a well deserved promotion.

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## Passenger Traffic Head

Announcement has been made that Dr. Adolf Scheurer, member of the New York board of directors of the Hamburg American line, has been placed in charge of the line's passenger traffic on the North American continent succeeding Emil Lederer, who has resigned from the line to accept a position as sole arbiter for all the Atlantic conference member lines.

The new director of passenger traffic began his career in the German merchant marine as a cadet on board of one the North German Lloyd's officer training ships. In due course he obtained his master's certificate and entered active service with this company advancing to the rank of second officer when he decided to study law. He graduated from Leipzig university with the degree of doctor of laws and passed his bar examinations, but returned to shipping and in 1920 became associated with Hugo Stinnes. In 1929 he became a member of the managing board of the Hamburg American line.

# Equipment Used Afloat and Ashore

## Nickel Clad Steel—Breather Valve—Water Meter—Welding—Ship's Radio—Compound Lumber—Pump Unit—New Gasket—Aluminum Rod

NICKEL clad steel plate is steel plate protected on one side with a dense, homogeneous sheet of pure nickel possessing the same chemical and physical properties as hot rolled or hot forged nickel in other forms. The International Nickel Co. Inc., 67 Wall street, New York has developed methods for fabricating nickel clad steel plate in which the nickel is firmly and permanently bonded to the steel base and will not separate from it under normal conditions of temperature change, pressure, vacuum, or deformation in forming.

There are now available large and thick plates for the construction of massive pressure vessels, evaporators, storage tanks and many other types of equipment lined with pure nickel.

The intimate metallic contact between the two metals gives the clad plate the heat conductivity of solid steel or solid nickel plate, and therefore maximum thermal efficiency is assured in all equipment requiring heat transfer through the wall. The thermal coefficient of expansion of nickel and steel are nearly identical and temperature changes within the range where nickel and steel may be used will not affect the bond. The bond between the nickel cladding and the steel base plate is a solid solution nickel iron alloy which is formed when the two metals are brought in contact at high temperatures. The nickel is actually welded to the steel. This union is effected at temperatures below the melting point of either nickel or steel and the action of bonding is by diffusion of the iron into the nickel.

The development and research department of the International Nickel Co. Inc. has prepared a particularly effective bulletin on methods for fabrication of nickel clad steel plate from which the above information has been taken. It is expected that this treatise will be ready for distribution in the near future.

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## Marine Breather Valve

AN EFFECTIVE vacuum and pressure relief valve for tanks on tankers has been perfected by Shand & Jurs Co., Berkley, Calif. The new valve is known as a marine breather valve. A predetermined pressure or vacuum may be maintained at all times by setting the tension on the spring of the valve. In this particular valve the manufacturer is using a new type of material which assures a tight seat at all times. This is an important feature for a breather valve because the unnecessary breathing of an explosive mixture from a tank constitutes a serious fire hazard. The new valve is made in four-inch size. Further information can be obtained by communicating directly with the manufacturer.

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## Accurate Water Meter

FOR 75 years the Worthington Pump & Machinery Corp., Harrison, N. J., has manufactured a number of types of water, oil, gasoline and grease meters. Recently another model of the water meter has been added. This meter, known as model GA, is said to be the most accurate yet developed for extremely low flows as well as for intermediate and high flows.

The new water meter is built in sizes from ⅝ to 2 inches, with normal flow limits from 1 to 160 gallons per minute. It incorporates many unusual features. Of positive displacement disc type, all register gears are fitted with rubber bushed bearings. The register box, of heavy construction, is fitted with a double lid to facilitate cleaning of the cover glass. The train assembly comprises four cast bronze gears and four pinions, all rigidly fastened to monel metal spindles which revolve in replaceable hard rubber bushings.

Though sufficiently accurate to record small drips and slow unseen leaks—an appreciable loss not recorded by the ordinary meter—this new meter is a sturdy instrument that will give long, reliable and efficient service with a minimum of wear, corrosion and maintenance.

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## Welded Construction

ARC welding has been accepted practice for some time in the fabrication in whole or in part of some units of marine equipment. Comparatively recent developments by Lukenweld Inc., Coatesville, Pa. include a number of new applications of arc welding as a method of manufacture for marine equipment such as the foundations and housings for diesel engines, speed reducer and gear cases, turbine mounts, pump and motor bases, gears, turbo generator bed plates and drive gear bases.

These parts have been constructed entirely of gas cut and formed steel plate, welded into the completed unit. One of these units for instance is a diesel engine crankcase assembly which weighs about 250 pounds less than a similar assembly made of aluminum. Another unit is the top block for an eight-cylinder 600 horsepower diesel engine which weighs only 1765 pounds.

A gear case of arc welded construction in two parts is a particularly effective application. The top section weighs 1848 pounds and the bottom section, 2840 pounds. It is said that the total weight of 4688 pounds for the entire gear case is 3125 pounds or 40 per cent less in weight than that of similar gear cases made by other methods.

The progress made by this company in the application of arc welding as a method of construction of many units and parts used in shipbuilding and marine engineering is illustrated and described in a bulletin recently prepared.

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## Ship Radio Equipment

IN ADDITION to the usual intermediate frequency radio equipment many American steamship companies are now recognizing the definite advantages of the more recently developed short wave, long range radio equipment, according to Charles J. Pannill, executive vice president of the Radiomarine Corporation of America. It is a well established fact that intermediate frequency equipment best serves in marine radio communication over distances up to several hundred miles. On the other hand when a vessel is from 1000 to 5000 miles from her home port, the short wave part of the radio spectrum offers the most efficient medium for communication.

Among vessels recently equipped with Radiomarine short wave equipment is the S. S. CACTUS of the Pacific Argentine Brazil line in service between San Francisco and South American ports. Another is the S. S. GOLDEN DRAGON of the American Hawaiian Co., in service between San Francisco and intercoastal ports as well as ports in the Far East. The steamships SCANMAIL and SCANSTATES, recently placed in passenger and freight service by the American Scantic line, are similarly equipped. The SCANMAIL, sailing on her maiden voyage July 2, from New York to Copenhagen and Baltic ports, was outfitted with the most modern type of communication facilities, enabling passengers to keep in touch with home.

## Compound Lumber Panels for Ship Construction

PANELING of living quarters is an important feature in every ship and particularly so in vessels carrying passengers where such spaces are extensive. Prepared paneling of a number of varieties is in common use for this purpose. A recent development is a compound lumber panel known as Phemaloid prepared by Haskelite Mfg. Co., 120 South LaSalle street, Chicago. This panel is electrically processed with a new phenol-formaldehyde collodal rosin. This resinous binder is water proof, fire resistant and antiseptic and therefore proof against mold and fungi, the principal causes of rot. The panel is cross laminated of real wood so that the original strength of the wood is greatly increased. The panel may be pre-finished with the same resin in combination with fabric or finished on the job with paint or varnish made with this resin. In either case the finish is unusually resistant to exposure and it can be easily renewed. These panels can be sawed, shaped and painted by the ordinary workman. They can be made in large or small units.

The new compound lumber is produced in huge hydraulic presses by a combination of electric heat and pressure. The successive layers of wood are placed on large trucks with the resin spread between adjacent layers. In addition there is a series of electrically heated polished plates interposed between the panels. The entire truck load is run into the press and pressure applied by hydraulic rams. A temperature of over 300 degrees Fahr. is electrically maintained for fifteen minutes during which time the resin and heat penetrate the wood, destroy fungus growth and fuse the different layers together permanently.

Approximately 70 panels 10 feet square and ¾-inch thick can be produced in a 20-minute operation. A combination of high temperature and high pressure produces a flat, smooth panel of uniform thickness. The effect is so marked that the process of sanding the faces of the panels is eliminated in most cases. The process used in making this type of compound lumber almost entirely eliminates the stresses between adjacent plies. This is due to the fact that the wood is compounded with its natural moisture content. When tested either dry or wet, a high shear value is obtained. The dry tests average over 400 pounds per square inch, while the wet tests average over 250 pounds per square inch.

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The shipping board on June 29 authorized the Merchant Fleet Corp. to negotiate with the various contending Boston factions to ascertain whether they can agree on specifications for a lease of the Boston Army Base pier property for private operation in the interest of the community, and authorized the Fleet Corp. to proceed to advertise for bids for such a lease, not to exceed a term of five years, subject in final form to approval of the board.

In the meantime, the Fleet corporation is directed to continue the operation of the Army Base pier property under the existing arrangements for which some of the Boston interests have expressed a preference.

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## New Gasket Compound

NOT even oil at a high temperature will affect gaskets of a new substance that has been developed in the General Electric research laboratory in Schenectady. The exposed edge of the gasket is not attacked, nor does the oil penetrate it. Oil filled assemblies have been operated on test at from 210 to 230 degrees Fahr. for a year without effect on the gasket and without leaks.

The new compound may be used in contact with cemented joints; neither dilute acids nor dilute alkaline solutions affect the compound. The new gasket material is a gray or brown, odorless and sulphur free alkyd resin for which Glyptal is the trade name selected by the General Electric Co. It is flexible and practically incompressible, and there is no noticeable hardening or stiffening in outdoor exposure tests. At temperatures below zero Fahr. the compound is somewhat brittle, but this does not affect its efficiency as a gasket when assembled in a joint.

Among applications recommended are those where resistance to hot oil is of primary importance, where exposure to naphtha, gasoline, kerosene, benzine and similar solvents may occur, where moisture is to be excluded and oil resisted, where there may be prolonged exposure to ozone and electric corona.

For bolted joints the gasket should be as thin as the strength of the parts and the nature of the surfaces will permit. A thicker gasket is desirable for screw joints. The gasket should be as wide as practicable. The face of the gasket should be covered as completely as possible by the clamping assembly so that minimum area is exposed, and, whenever possible, an enclosed gasket should be used. It should be used under compression with the clamping surfaces drawn up even so that compression is uniform. Allowance should be made for transverse distortion during clamping.

At present the material can be obtained in sheets up to 13 by 36 inches, and in thicknesses from one mil to ⅛-inch. Round gaskets now available have a maximum diameter of 12¼ inches and a maximum thickness of ⅛-inch. Larger sizes are to be made available later.

## New Centrifugal Pump Unit Automatically Primed

A NEW, self contained, automatically primed, centrifugal pumping unit with a number of distinct advantages has been developed by Worthington Pump and Machinery Corp., Harrison, N. J.

The new unit comprises an electrically driven high efficiency ball-bearing centrifugal pump, mounted with its motor on a fabricated steel bed plate, together with a monobloc priming unit of the wet vacuum type, controlled by an electric pressure switch. The priming pump, or evacuator, is an adaptation of the "Hytor" pump, and is licensed to Worthington under patents of the Nash Engineering Co.

The evacuator is connected to the "high spot" of the suction volute by means of substantial tubing, and is sealed with clear water held in a reservoir built into the bed plate of the complete unit. The evacuator operates to remove air from the centrifugal pump, thereby causing it to be primed.

The pressure switch is placed in the evacuator motor circuit and its pressure connection is piped to the discharge nozzle of the main pump. Whenever the discharge pressure of the main pump falls below a predetermined point, the pressure switch is in closed position. When the discharge pressure comes up to normal the switch opens and remains open as long as the pressure is maintained. If the pump loses its prime the drop in discharge pressure closes the switch, causing the evacuator to operate until pressure builds up.

Special advantages claimed for this unit are: A modern high efficiency, ball bearing centrifugal pump; exactly suitable size and type of pump for a particular service; a priming unit that operates only when needed; uses no more power and occupies no more space than a nonpriming unit; simple in construction, and positive and reliable in operation; longer life and lower maintenance cost for equal service.

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## Aluminum Welding Rod

DRAWN aluminum rod for welding sheet aluminum and aluminum rod for welding cast and sheet aluminum and aluminum alloys are now available in the form of 10-pound coils of ⅛-inch diameter rod according to an announcement by the Linde Air Products Co., 30 East Forty-second street, New York. It has been found that it is more convenient to use aluminum welding rod in coil form for certain work. In production work the amount of waste from short ends is reduced and under many conditions the operator can handle a coil more easily.

# Personal Sketches of Marine Men

## Frank P. Foisie, Industrial Relations Manager, Waterfront Employers, Seattle

By Robert C. Hill

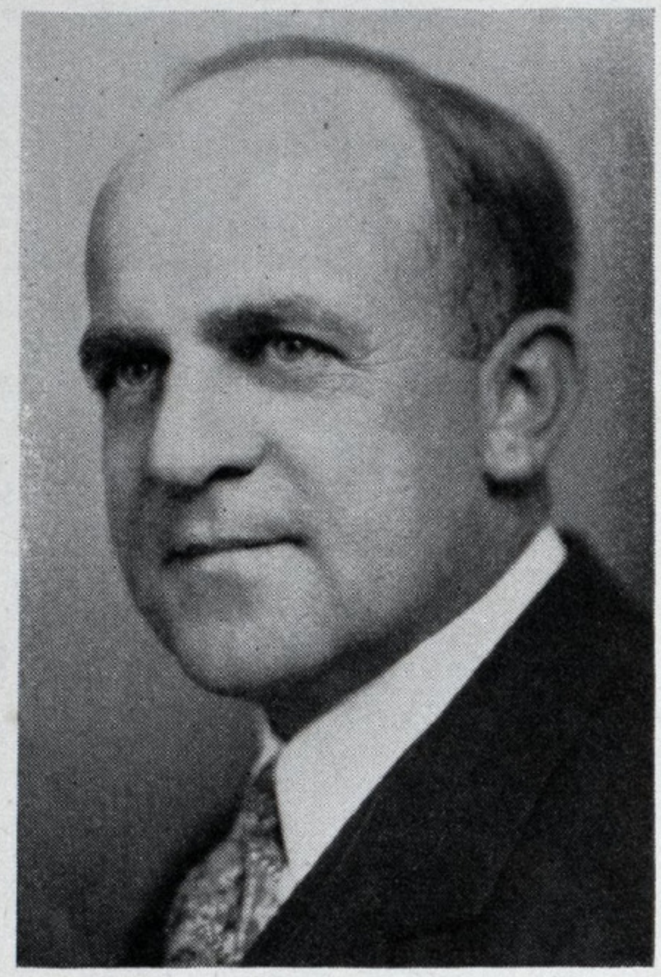


*Photo by Grady, Seattle*

A KEEN student of industrial relations, he is a practical theorist whose ideas have stood the severe test of everyday application.

HIS enthusiasm is contagious. Having definite opinions, he is equally frank and firm in his relations with both bosses and men.

REFINED and perfected, the joint shop plan, which he practically initiated, stands today as a monument to those who sponsored it.

NOT many years ago, Seattle was an international byword for everything that was unsatisfactory as far as waterfront conditions were concerned. It was known as one of the worst ports in the country. Strike followed strike, lockout and walkout succeeded each other. Intense bitterness existed between bosses and men. Labor was inefficient, costs excessive. Labor agreements were merely scraps of paper.

Today a different picture presents itself. For more than a decade there has not been a serious labor dispute. Strikes are unknown. The joint shop plan in which both employers and men have a voice, has established peace and good will. A foundation of understanding has been built. Generally speaking, both sides are satisfied. Stevedoring and trucking operations have been reduced in cost, wages have been held at high levels and ships are assured of efficient and dependable labor.

No one man has been responsible for this miraculous change but one person stands out prominently. He is Frank P. Foisie, of Seattle, who developed the joint shop plan. His enthusiasm and personality made the idea effective. Neither employing stevedores nor workers would willingly return to conditions existing before the present plan was adopted.

Mr. Foisie occupies a unique position in the shipping industry. He is known throughout the country for his Seattle accomplishments. He ranks as one of the leading exponents of advanced waterfront methods. Today he is industrial relations manager of the Waterfront employers of Seattle, and secretary of the Shipping Federation of Washington.

A native of New England, he has lived in Washington most of his busy life. From the Broadway high school, Seattle, he went in 1908 to Harvard where he graduated in 1912. From national Red Cross headquarters he returned to Seattle in 1917 to establish the Northwest division of that organization.

In March 1921 he took over the job of decasualizing and harmonizing the Seattle waterfront, forming the joint committee of employers and men through which rules and regulations, wage scales and other details were worked out and adopted. It required much argument to induce the men, suspicious and rebellious, to approve the plan. In the intervening years the joint-shop has functioned effectively.

As time went on Mr. Foisie made an intensive study of conditions in all large ports of the country, paying special attention to industrial relations, decasualization and regularization of employment. He has written much on the subject and has been a speaker at many national gatherings. Frequently his advice and opinion are sought. In many ports today, the ideas and methods developed by this practical, hard-headed student have been adopted and are working effectively.

In 1926 he was awared the Jacob Wertheim research fellowship for the betterment of industrial relations by Harvard university. This foundation was established "for the support of original research in the field of industrial co-operation."

Three years ago he was instrumental in organizing the Stevedores' self insurance pool, designed to reduce the cost of protection against the heavy claims incident to this hazardous occupation. The results have been gratifying, insurance costs having been cut approximately in half and improved relations with the men established.

While the joint shop plan was sponsored by the employers, the manager has never been a "yes" man. Time and again he has shown the "bosses" where they were wrong. He is equally frank in dealing with labor. A strong man, with decided opinions, engaging personality, convincing in argument, yet conciliatory in negotiation, he commands the respect and confidence of the many conflicting interests he represents. Today there is an understanding between them that has promoted peace and good will to their mutual advantage.

# Marine Review

Reg. U.S. Pat. Off.

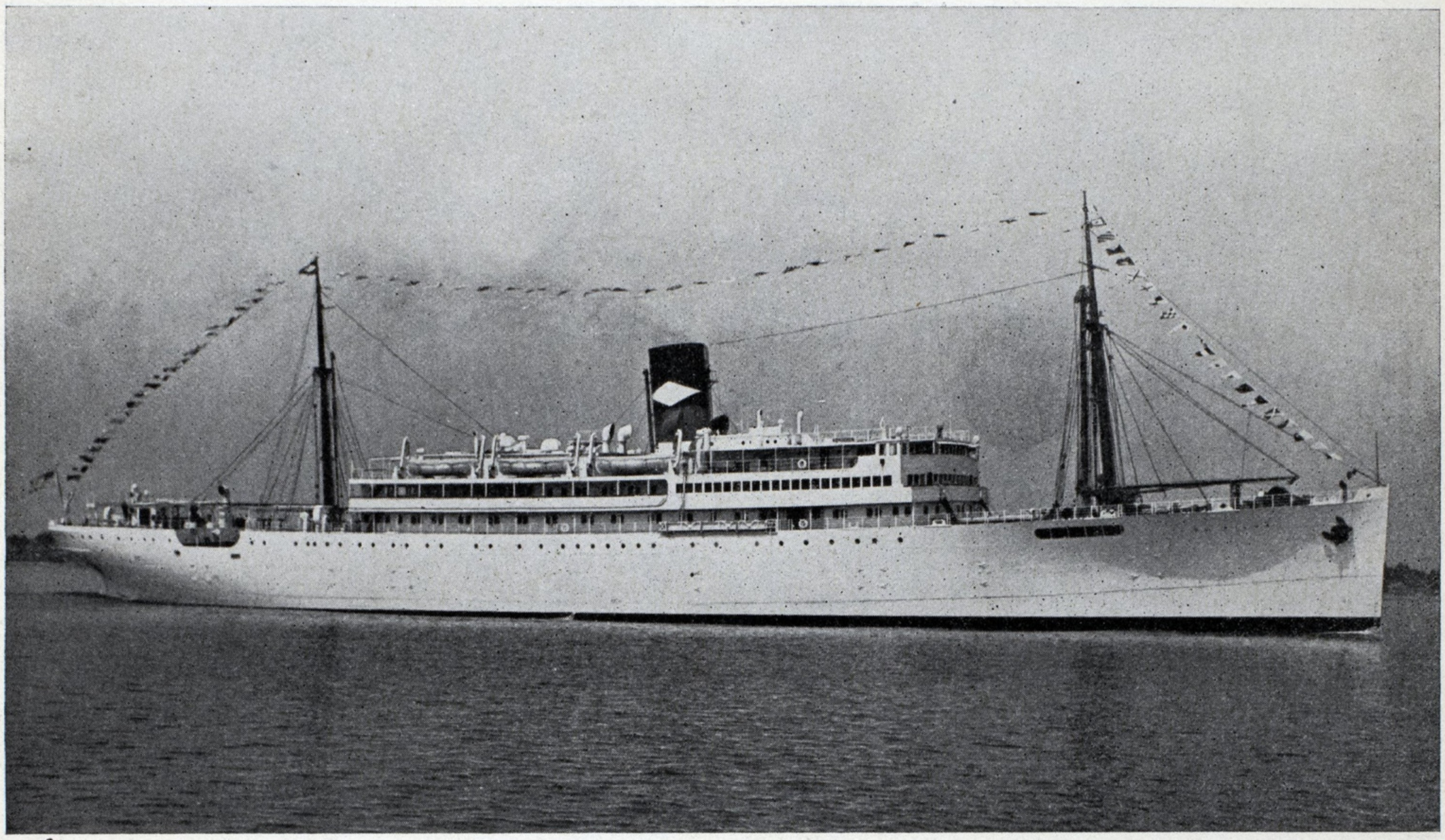
*The National Publication Covering the Business of Transportation by Water*


August, 1932

Vol. 62, No. 8, August, 1932, issue of MARINE REVIEW, published monthly at Cleveland, O. Entered as second class matter at the post office, Cleveland, Ohio, under the act of March 3, 1879. Subscription price $3.00 a year in U. S.; Canada, $4.00; Great Britain, £1; single copies, 35c

# S. S. QUIRIGUA

## LATEST ADDITION TO THE GREAT WHITE FLEET



** This new White Fleet liner is driven by turbo-electric machinery designed to develop 10,500 HP. Speed, 17½ knots. Principal dimensions: Overall length, 447 feet; Length between perpendiculars, 415 feet; Beam, moulded, 60 feet; Depth, moulded to upper deck, 34 feet, 9 inches; Draft, 24 feet.*

*THE S. S. QUIRIGUA*, second of three sister ships to be completed at Bethlehem's Fore River Plant, was delivered to the United Mail Steamship Company on June 4th, after making the following excellent record on her official trials:

*Speed:* Highest run . . . . . 20.36 knots. Highest average . . . . . 19.28 knots.

*Fuel Consumption:* Average for all purposes during 4-hour, full-power run;

**.73 POUNDS PER S. HP. PER HOUR**

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BETHLEHEM STEEL

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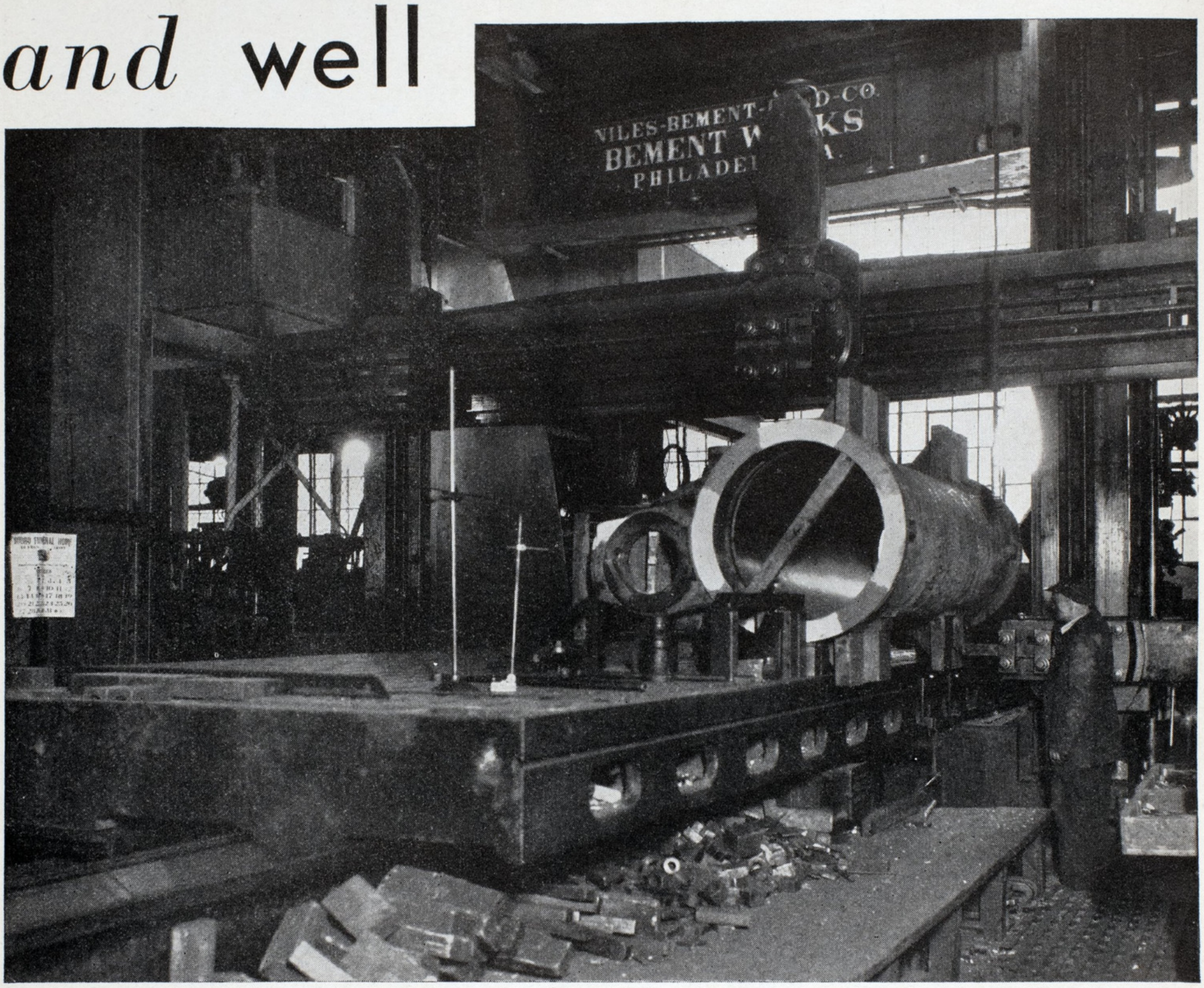


THIS photograph above does no more than suggest the complete, modern facilities for building, repairing and altering ships at American Ship's five conveniently located yards.

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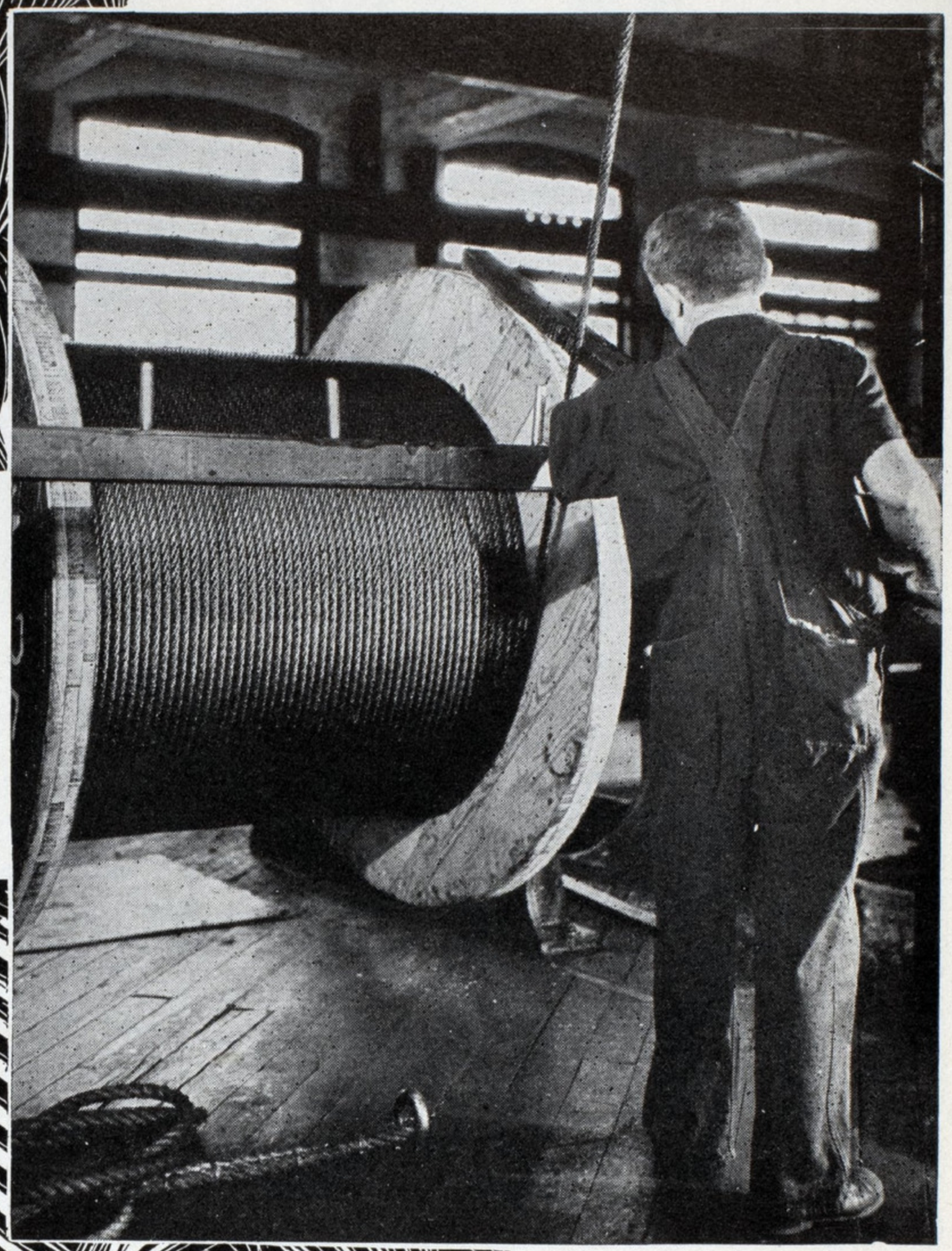
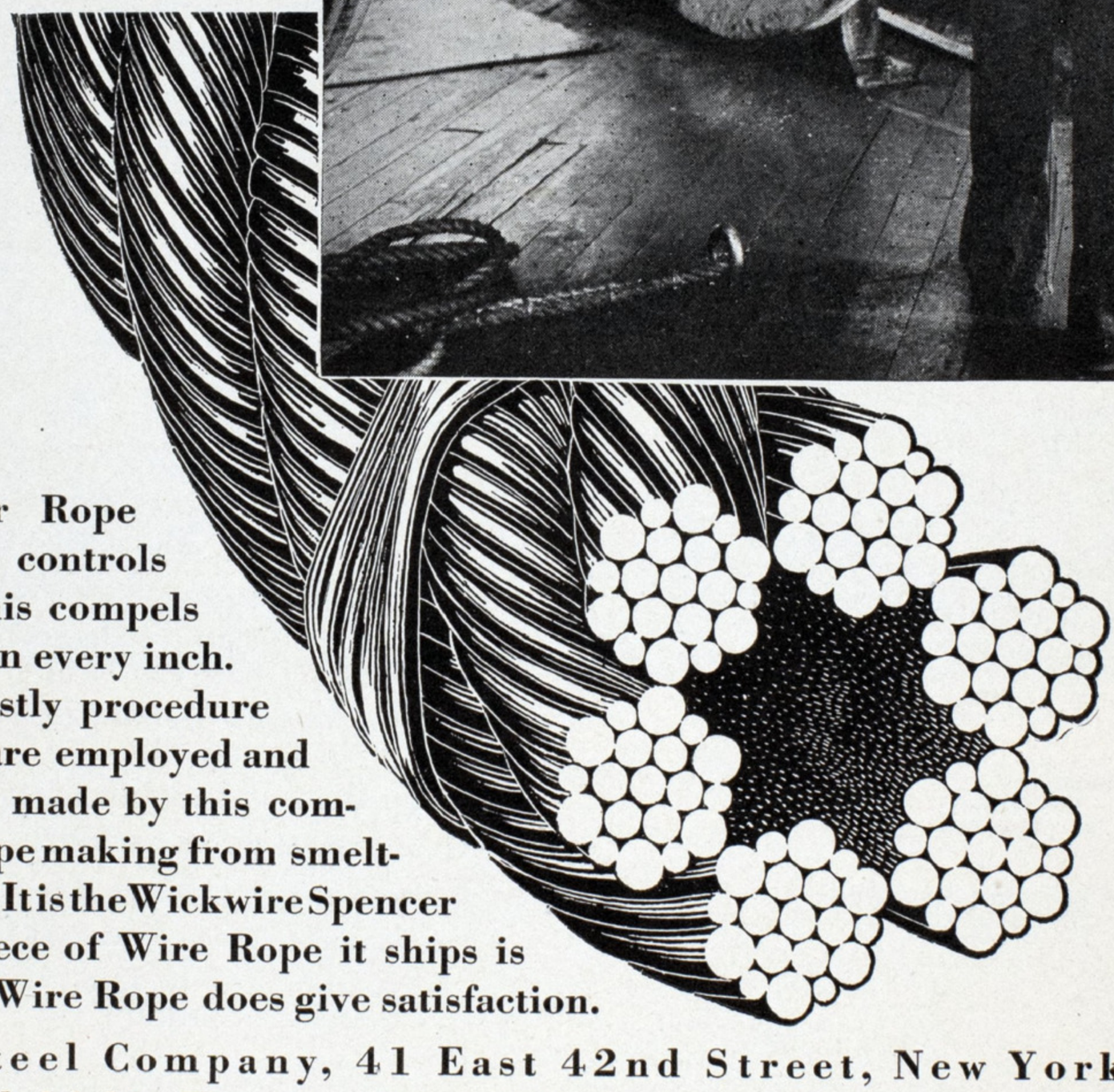


# We *Could* reel Automatically...

# *but*



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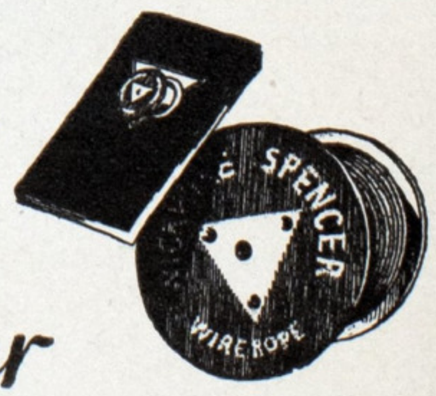


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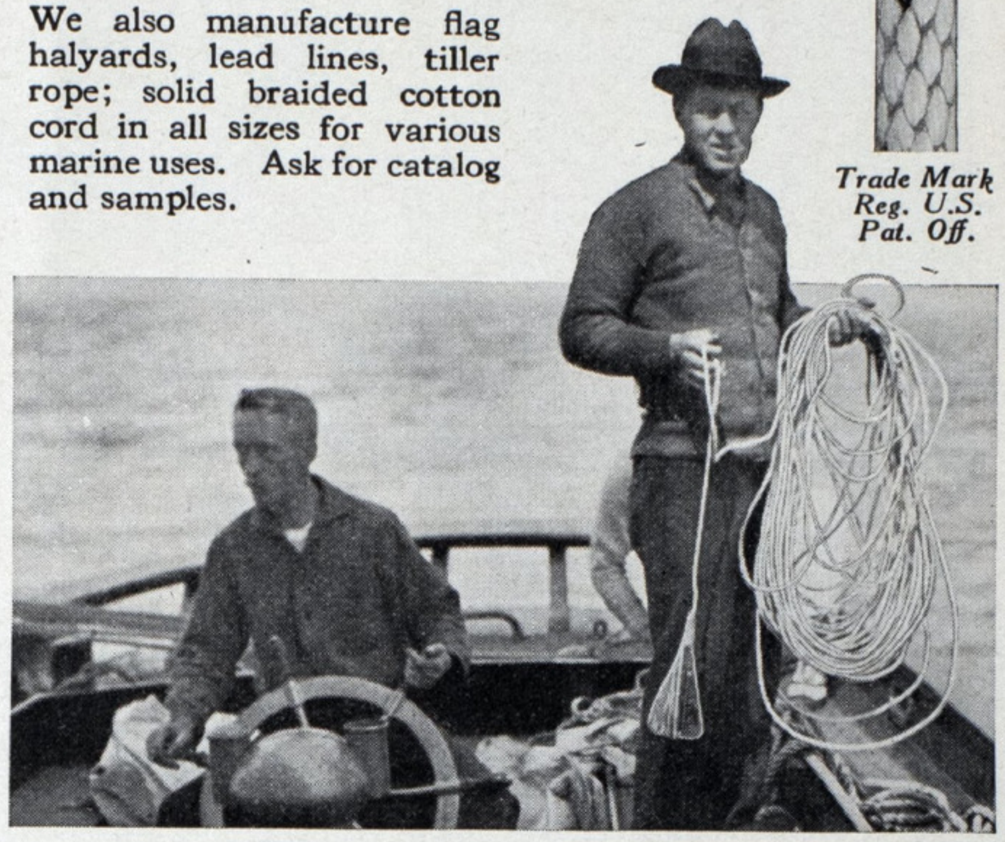

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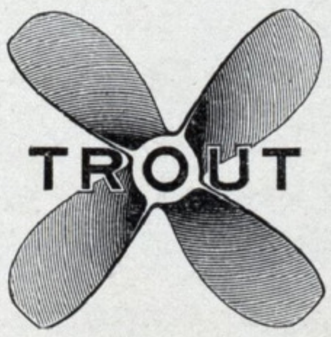


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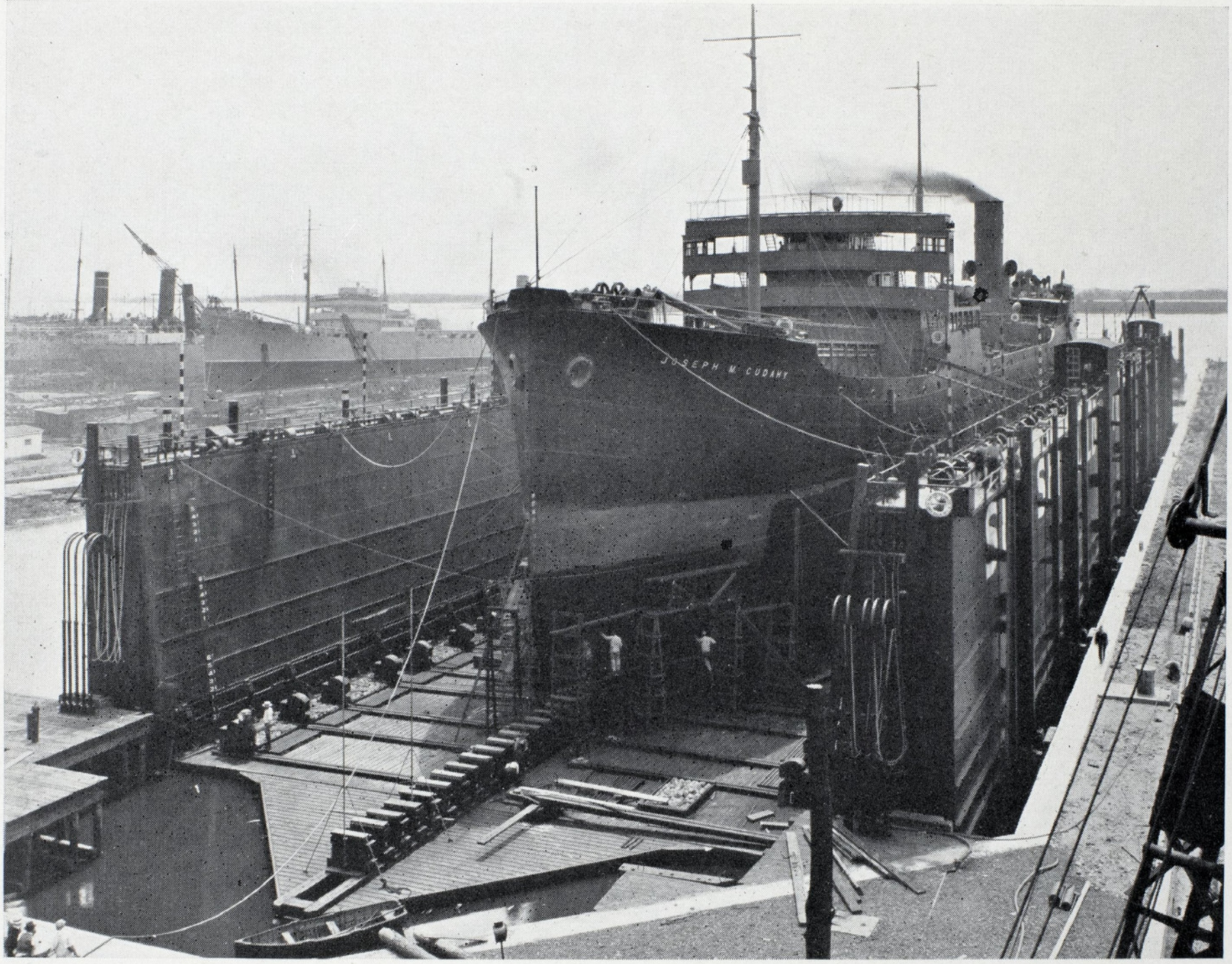


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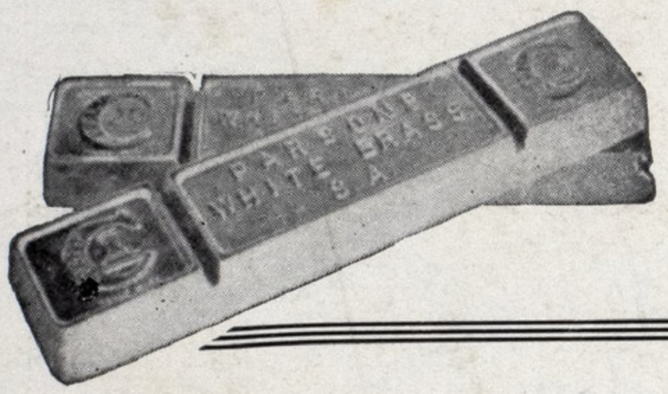


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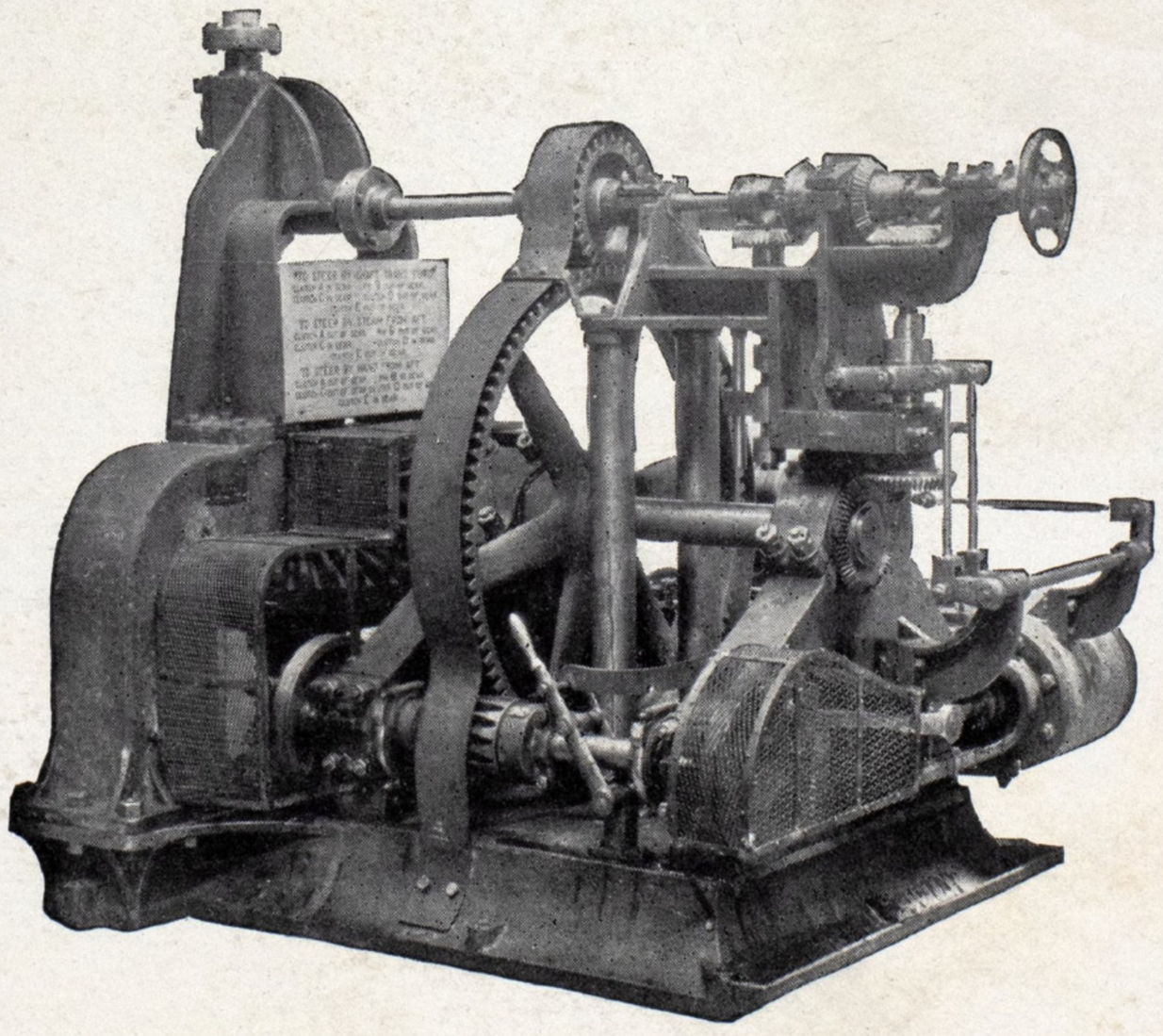

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